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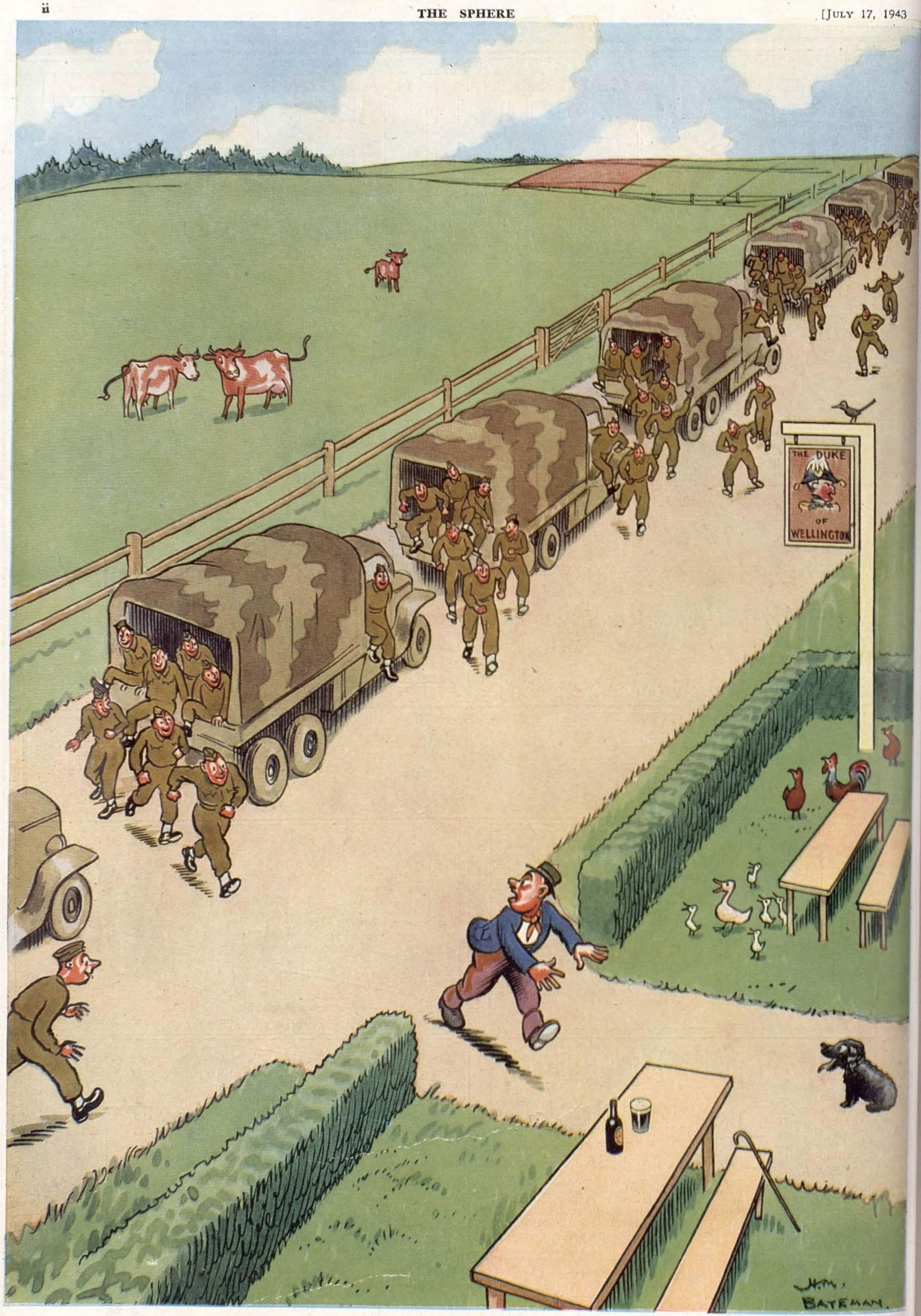

"My Goodness — My Guinness"

Volume CLXXIV No. 2269 The SPHERE, London, July 17, 1943

THE SPHERE
With which is incorporated "THE GRAPHIC"
The Empire's Illustrated Weekly

THE INVASION OF ITALY BEGINS: THE ISLAND OF SICILY, INVADED BY ALLIED TROOPS IN THE EARLY MORNING OF SATURDAY, JULY 10. A special "Sphere" diagram-map, showing the 100-mile strip on which the landings were made—*Drawing by E. G. Lambert*

The invasion of the "under-belly" has begun—and long "before the leaves begin to fall," as Mr. Churchill said. On Saturday morning last, in the very early hours and under cover of darkness, the first landings by British, Canadian and American troops were made along the south-eastern corner of the island's coastline, over an area of about 100 miles long. A great armada of 2,000 vessels had been assembled; and, almost within hours, selected areas were firmly in our hands, and Allied troops were advancing and joining up with the airborne troops who had been dropped inland. Sicily is the largest island in the Mediterranean: it is separated from the toe of Italy by the very narrow Straits of Messina. The drawing above shows the areas selected for invasion in the south-east, and the initial successes scored within the first few hours. The British and Canadians went in at Pachino, in the Cape Passero tip, where they quickly secured possession of both town and airfield: away to the west—at Gela—American troops captured two airfields and successfully withstood an attempted tank attack. Elsewhere, the British First Army everywhere reported successful advances (See also page 67 of this issue)

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A WAR NEWSLETTER —No. 202

1, NEW OXFORD STREET, W.C.1.

Under-belly.— So it has come, the long-expected assault on the under-belly, and come, as we hoped, timeously. The "second front"—as a result of the news of July 10—suddenly took on the meaning which the Russians always assigned to it—a meaning which, by the chances of war, it has never yet assumed—that is, a simultaneous engagement of the *land* forces of the Nazis, in the *European* theatre of war, by Russia and by the Western Allies. Through our Western spectacles this "second front" has been raging ever since Alamein. The lull which followed the great Russian counter-attack came sooner and lasted longer than we expected. The victory of Tunisia (the equal of Stalingrad) proved to be the prolongation, not the duplication, of the Allied engagement of the Nazi land forces on the large scale—through no fault of ours. We could fairly claim also that long before the Nazis launched their new Orel-Kursk offensive, the Western end of the "second front" (Russian meaning) had started with unexampled resolution—over the Ruhr and in the Mediterranean, not to add in the Atlantic. To-day, seen through any spectacles, the second front is—a second front, with no shades of meaning, no reservation. It is a solemn moment. We must steel ourselves to bitter losses and sharp reverses of fortune. But when there is no other way but a major operation, there is a measure of thankfulness when the hour for it strikes at last. This we know: no detail of expert preparation forgotten, no failure of courage and skill and resource, will handicap the chances of Allied success in this fearful venture.

Aflame from End to End.— The most insistent activists among Allied and neutral critics (not to speak of those Nazi propagandists who have been jeering at our invasion "boasts") must have found their sails flapping when they read the news of the historic week-end of July 10-12. The front was aflame from end to end. The Allied punch was strongly brewed and bubbling over. In the South-West Pacific the Japs were tasting it and finding it strong enough. In Sicily, between Syracuse and Licata, "by creek and inlet making," the land forces of the Western Allies were smoothly inundating the sacred soil of Italy, and using the Italian sea and air without respect for Italy's sovereign and historic rights. And in Russia between Orel and Bielgorod, a battle of machines, more destructive than any yet known in the history of modern warfare, was taking toll of Hitler's armour at a daily rate trebling the maximum rate in the fiercest phases of Stalingrad. The Russians, while confident of the ultimate issue, are far from minimising the grave threat already existing to their vital and strained communications behind Kursk. Yet the Nazi purpose is by no means clear. If Russian estimates are reliable, the Nazis lost in the first six days of their new offensive as many tanks as were accounted for in all the African campaigns combined, Italian and German. This reckless extravagance is, so far, a mystery lacking any satisfactory explanation, unless indeed Hitler (or whoever acts under his "name-to-swear-by") is fighting a propaganda campaign to prove to doubting enemies and neutrals that our Ruhr blitz has made no impression on his factory output, and that he can "take it" in tank wastage on this scale without distress. In default of a solution, the impression remains that (incredibly) he is playing *our* game. Light will gradually come on the scene.

General Sikorski.—General Sikorski's death cannot but prove a heavy loss to his country and the Allied cause in war and peace. There are no two opinions about his character. He was a big man, and, despite certain unhappy consequences of his recent policy and actions, a moderating influence and a statesman who saw far and broadly. In his notable record as soldier and as statesman, he had given proof of the qualities which leaders in war and in peace must possess. Nevertheless, I cannot conceive of a more difficult position for a statesman to hold than his. No just man can under-estimate or dispute the *wrongs* of Poland over generations of Time. The rights of Poland at any given time are not so easily agreed. There seems, indeed, always to have been one justice for the most happily situated nations of Europe and another for Poland and one or two more whose geographical and ethnological conditions and problems are outstandingly difficult and dangerous. One justice and one logic. If wrongs can be computed, rights should be equally amenable to general agreement by the same standards of justice. The trouble is that the cause of the Common Good exacts from the *patria infelix* a larger sacrifice for expediency than is required of more fortunately placed nations—and the Poles, a virile, healthily aggressive and acutely nation-conscious race, are not perhaps well equipped to put up with compromise or to wait with patience and restraint. And those who remember the whole catalogue of Poland's sufferings, betrayals and injustices can hardly find cause for blame if Polish patriots to-day are not disposed to fold their hands and wait until the Great Powers have time to attend to her claim to enjoy as large a measure of justice, security and recognition of sovereign rights as any other great nation can be said to enjoy. Every settlement of the Polish problem hitherto has proved a direct incitement to another European war, and the perfect solution is still to be found. It must comprise something more workable than corridors and guarantees and presupposes a considerable change of heart, political and moral, in that part of Europe. There are those who believe that victory over Nazism will bring this miracle about. The Poles, perhaps, have long memories, and long memories often induce cynicism, impatience and even despair. I have felt the same tendencies in the past during long visits to the houses of friends preoccupied with their own affairs, and a very bitter longing to be back among my own books and other daily interests. Indeed, it needs supreme tact and outstanding patience to sustain the role of guest or protégé. It is easiest played by weak characters and by idlers. History will judge that Sikorski played an impossibly difficult role to the admiration of his own country and of the Allies.

Australian Bastions.— General MacArthur has well begun another important stage in the war against Japan and the safeguarding of Australia. The broad and bold design is clear enough. The northern approaches to Australia are set with an "archipelago" of islands, some enormous, some big and many small, which provide in enemy hands jumping-off grounds for attack and bases for harrying the Allies, and in Allied hands strong points and advanced bases for both defence and further assaults. In this archipelago the chief thorns in the Allied flank have been the Japanese bases at Lae and Salamaua on the north-east coast of New Guinea in Nassau Bay, Rabaul on the northern tip of New Britain, and Munda in New Georgia. The scope of the Allied plan has naturally not been publicly announced to the world (and the enemy). The Allied publics presumed that objectives in this campaign were limited to the southern bastions of the great island groups, those of New Guinea and New Georgia. But when both the garrisons at Salamaua and the defences of Munda were soon threatened seriously by Allied progress after great initial air victories, the scope of the strategic plan began to be talked of as even more important—no less than a serious threat to Rabaul by the occupation of Bougainville Island, east of New Britain, where the Japanese are strongly entrenched. Progress had been swift up to the week-end of July 3 and 4, and the prospects favourable. The Allies clearly control at present the seaways (our naval forces have already dispersed a Japanese squadron which attempted intervention) and the airways concerned in the southern objectives, which cover an enormous area and call on the services of several distinct task forces working under diverse conditions. It is a great undertaking, beset with difficulties. If it succeeds, it will go far to transform the position in the South-West Pacific, and will finally remove any still existing threat to Australia. It will be also a prompt and handsome cashing of Allied promises to conduct the war against Japan with ever-increasing vigour and offensive spirit.

THE QUEEN VISITS A.T.S. GIRLS (amongst whom is the Prime Minister's daughter) who operate the instruments in a Command Post of a London Anti-Aircraft Battery: Recently the Queen spent a very full day visiting and inspecting A.T.S. units at work in the London District, including a Command Ordnance Depot and Mixed A.-A. Battery. During her tour her Majesty saw and spoke to many auxiliaries at an Ordnance Depot sorting, packing and checking equipment for Overseas Forces. She also spoke to the first A.T.S. "Boiler Girls," who are now working at furnaces in this Depot which provide power and heat, thereby releasing men of the Pioneer Corps for Overseas duty. In the picture above the Queen is seen with some of the Battery A.T.S. officers. Second from the right is Sub. Mary Churchill, the Prime Minister's daughter. Mrs. Jean Knox is in the background on the left.

"The Lull" Ends.—The history of war is a long record of surprises, as the art of war is not so much a perfected science as a happy combination of good guessing and swift adaptation to meet unforeseen problems. That at least applies to strategy and strategic planning on the large scale. No doubt there is a perfected, though constantly changing, science which achieves sweeping victories in local campaigns, however large or important (e.g., Stalingrad, Tunisia). After Tunisia the "lull" began to be a subject of comment—it was an uneasy lull for the Ruhr and Southern Italy, for the U-boats and our convoys, for the airmen and the marines and so forth—and the arm-chair strategists sat up and made their prophecies and calculations. But the lull was not broken quite as they foresaw. I should put (in racing metaphor) the entry for the New Blitz Stakes somewhat as follows, as called over in the Club Arm-chairs: Invasion of the Underbelly, 4 to 1; invasion elsewhere in Europe, 8 to 1; offensive by Russians, 8 to 1; major offensive by Allies on Japan, 8 to 1; major offensive by Japan on Allies, 8 to 1; major offensive by Nazis on Russia, 15 to 1. It was no doubt an open race, with no odds-on favourite. And I should judge that the results upset the pundits when some longer-priced horses came in first and second. Arm-chair pundits are not those who direct this war.

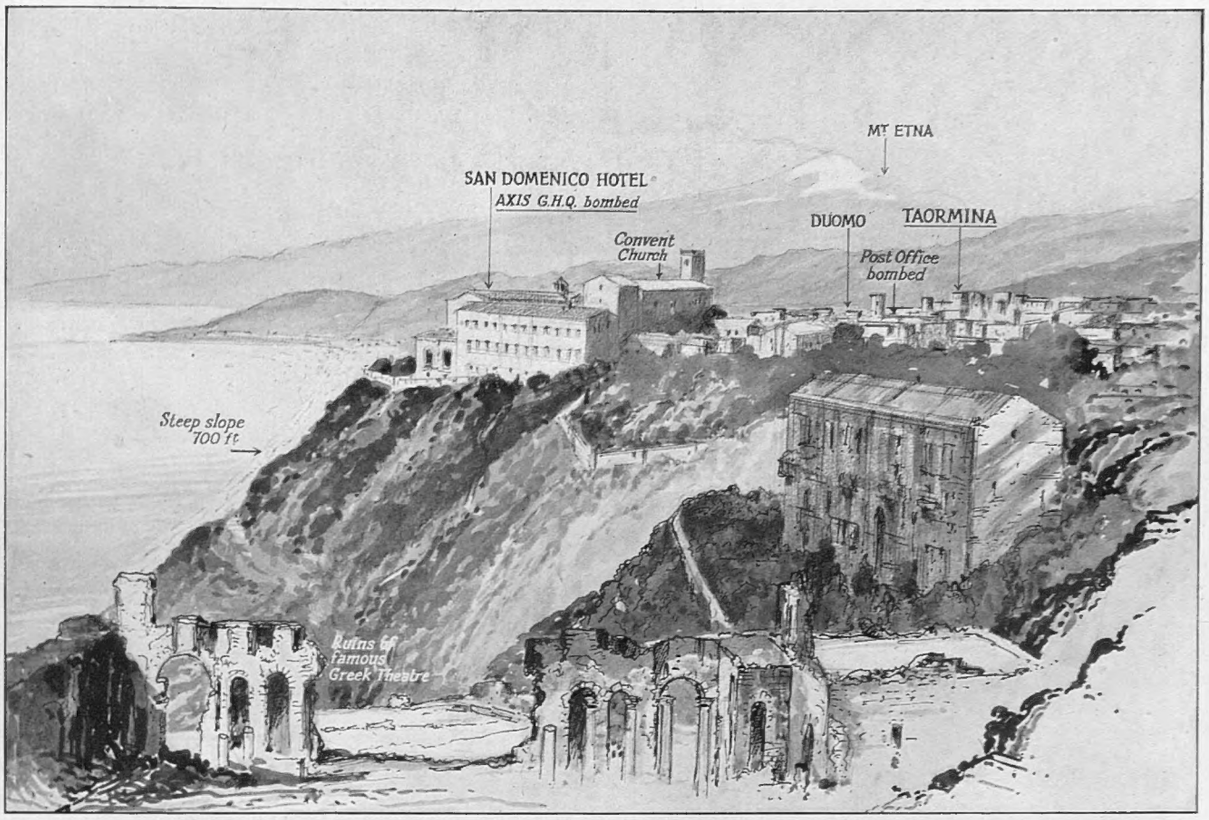
Mr. Muff and the Public Schools.—Mr. George Muff, M.P., and some others did not accept hearsay evidence (given at County Hall and on the tubs) about the "guilt" of the public schools. They went to see for themselves. They saw and were conquered—by the boys. Mr. Muff, being a far-minded, generous man, wrote a letter to *The Times*, setting forth the findings on direct evidence of his party. The findings were favourable. That letter was described by Sir George Schuster as of perhaps historic importance. It was certainly a graceful, charming letter, and its importance, as a corrective of ill-informed prejudice, is not to be questioned. That the boys themselves are the best advocates and advertisement of their system of education I never doubted. The boys move with the times they live in and move faster than the evolution of the system; and it is they who are primarily responsible for quickening the pace of evolution. Time and again in the history of political reform in our country it has been driven home to fair-minded men how much of the fire and fury of criticism of traditional institutions draw their power from uninformed sources, from prejudice and jealousy and even from the shrewd devices of demagogues. (Mr. Lloyd George, led by a ducal hand, rode a white pony over his potential "smiling cornfields" [which are still barren deer forests] and perhaps reflected that his Limehouse speech might with justice be catalogued as invective rather than statesmanship.) "Go and see for yourself" is a good rule for reformers and last-ditchers, red and pinks and blues and buffs. A little knowledge is a dangerous thing, but with reformers and demagogues it is better than complete ignorance of facts. Mr. Muff has adorned his surname with a nobler sense and meaning.

THE OLD STAGER

SICILY INVADED

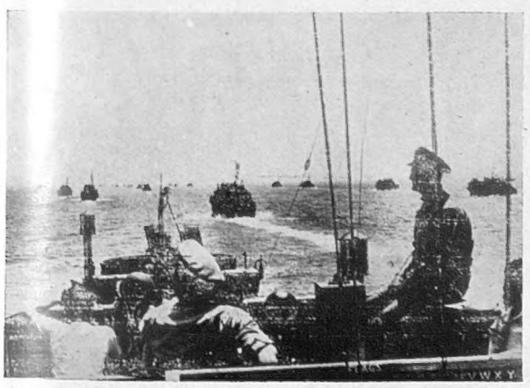
The Destruction of the Axis G.H.Q. : and the First Radio Pictures of Invasion Scenes

The Grand Hotel San Domenico was known to all visitors to the famous beauty spot of Taormina : it is—or was—a most conspicuous building on the east coast of the island a few miles from Messina. Here, the Axis G.H.Q. had been located in the old Dominican Convent which, some years ago, was converted into an hotel much patronised by English and American visitors. The day before the landings took place, heavy American bombers attacked this building and the General Post Office near by in daylight. Direct hits were scored which threw wreckage and debris high into the air ; and huge fires followed. It is not unlikely that this unexpected destruction of the Axis H.Q. may have dislocated a good many of the plans for the island's defence.



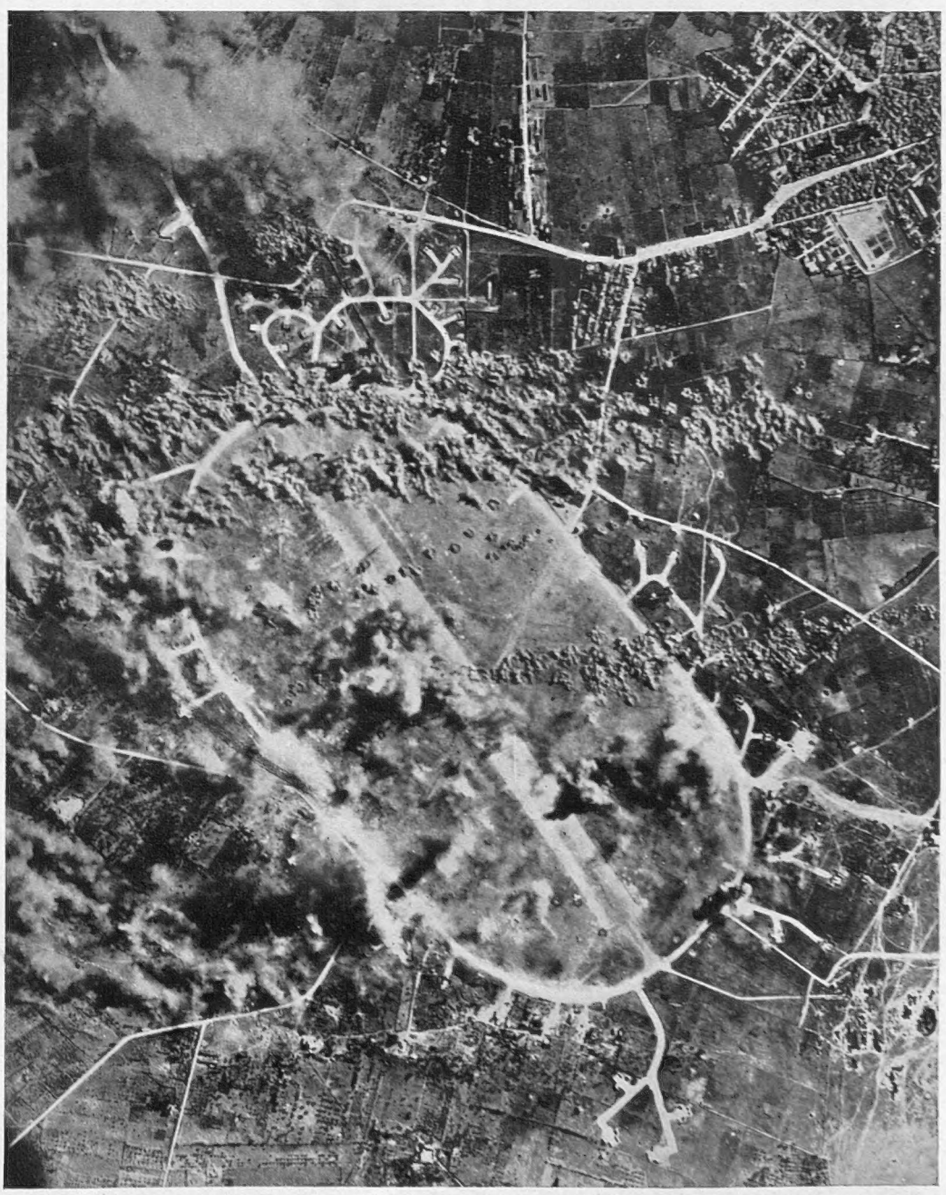
DESTROYED THE DAY BEFORE THE INVASION : The Axis General Headquarters at Taormina, located in the Hotel San Domenico, which was wrecked by heavy bombers of the Ninth American Air Force on Friday, July 9—an achievement which must have produced great confusion amongst the island's defenders when the landings took place—*Drawing by Percy Horne*

LAN IG CRAFT LOADED WITH TROOPS as the invasion ot under way : The ships in the background are already setting out for the island



HOW THE INVASION ARMADA SAILED FOR SICILY. One of the first pictures from Algiers, sent by radio from the U.S. Army Signal Corps

AMERICAN PARATROOPS IN THEIR PLANE EN ROUTE TO SICILY. Lieut.-Colonel Charles Kouns (standing) is telling his men their destination and that they will be the first U.S. troops to land



HOW THE AIRFIELDS ON THE ISLAND WERE ATTACKED AS A PRELUDE TO THE INVASION. This photograph shows part of the damage done to the Castelvetrano airfield in Sicily when it was raided by Flying Fortresses during the six-day period of intensive bombing which preceded the Allied landings on the Sicilian beaches

FROM THREE LANDING CRAFT MEN OF THE R.A.F. REGIMENT RUSH ASHORE TO ATTACK assault parties stream out. The work of landing vehicles and equipment is o

PREPARATION FOR INVASION

How the British Troops Have Been Prepared in Britain for the Invasion of Europe

—Pictures taken recently at a Training Centre of Combined Operations Command

The pictures reproduced here were all taken at a Training Centre of Combined Operations Command, where the Royal Navy, the R.A.F. and the Army work in the closest co-operation and where training is based primarily on the use of landing craft, which are the vehicles for amphibious attack. Amongst these are many different types, the best known being Assault, Personnel, Support, Vehicle and Tank Landing Craft.

The R.A.F. Regiment is tough; its train intensive, its carefully selected men are of firs grade, both mentally and physically. During the a of the Pre-Invasion Exercise depicted here, lan were made from various types of craft—by day a night. The attacks were resisted by Naval Comma Mustang aircraft of Combined Operations assist the defence of the objective—in this case, an airfi

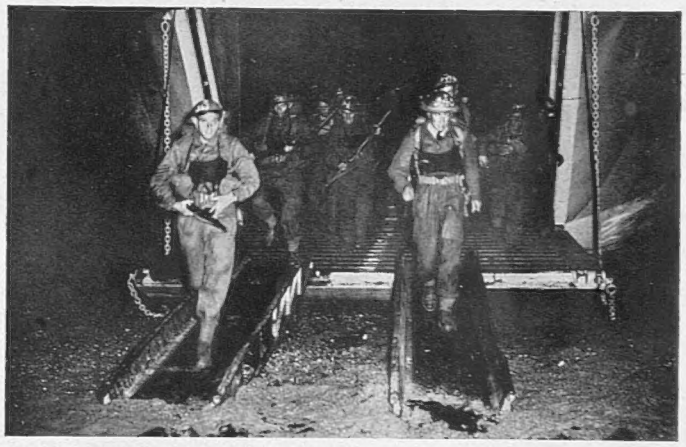
AS THE ASSAULT PARTY DASHES ASHORE FROM THE LANDING CRAFT, preparations are made on board for the landing of the vehicles. Ramps are put down from vessel to shore for this purpose, as shown in the two pictures on the right

THE RAMPS ARE PUT DOWN so that Motor Cyclists and Vehicles follow the landing parties ashore. Note how close inshore shallow-draught landing craft can come

LORRIES AND ALL TYPES OF EQUIPMENT can be moved off in a very space of time. Constant rehearsal such as this ensured that were few hitches when the Big Day arrived

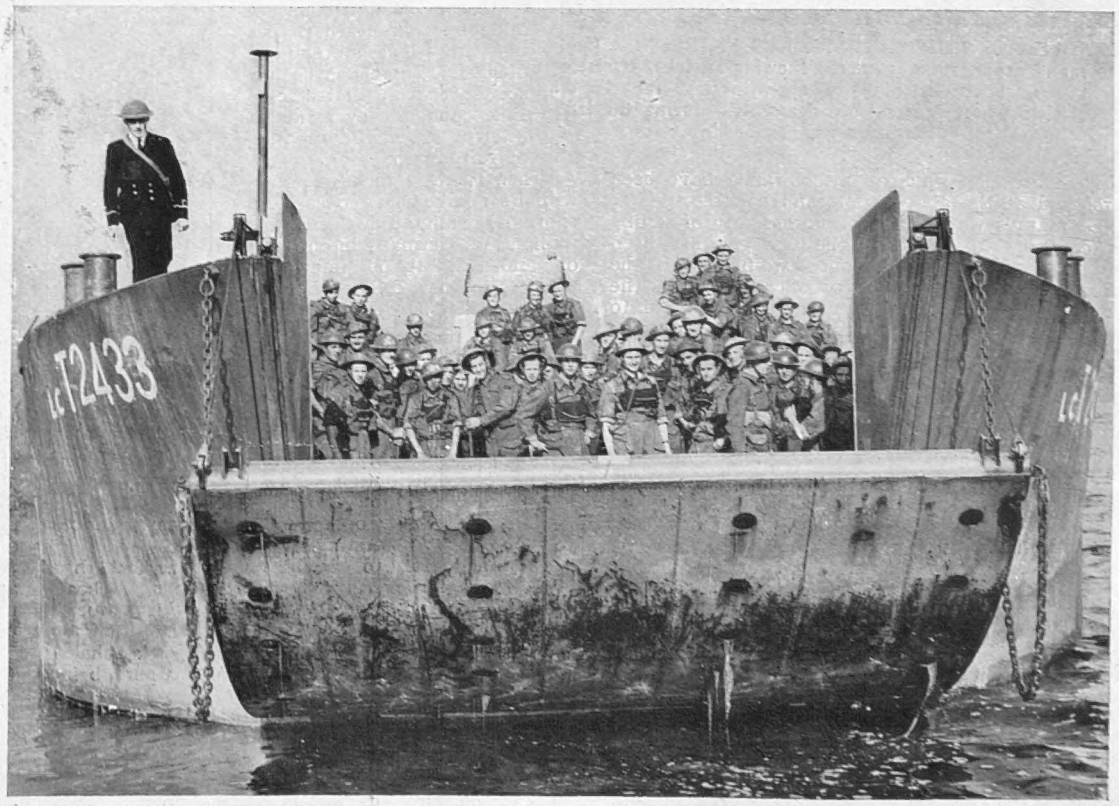
OBJECTIVE. The landing has been made on a sandy beach, on to which the big powered barges have been driven: the front portion is then lowered, and the ...ut by other parties of the Regiment whilst the storming parties are actually moving forward to their first objectives in enemy territory

FOLLOWING A GUIDE-ROPE, men of the R.A.F. Regiment wade ashore during a swimming test carried out at the Training Centre



DURING NIGHT OPERATIONS the landing bridge is assembled by battle troops, and the advance parties go ashore in full battle array in the hours of darkness

A MAN INFLATES HIS RUBBER LIFE-JACKET before embarking on a landing craft. All the men of the Regiment are so equipped



HOW THE ENEMY PROBABLY SAW THE FIRST ARRIVAL OF OUR TROOPS IN SICILY: Part of the attacking force preparing to jump ashore during Amphibious Exercises as the forepart of the vessel is being lowered. Note the great size of these specially-built landing craft

THE RECORD-BREAKING BATTLE

The Great Onslaught on Germany by Air—"The Battle of Many Objectives."

Described by FERDINAND TUOHY

NEVER in history can an onslaught have had so many effects, repercussions and implications as the epoch-making Battle of the Ruhr. "Battle" is indeed a misnomer. "Offensive" or "campaign" would be the nearer the mark, since the present vertical assault has already exceeded four months in duration, and may well continue intermittently for as long again. But the point is that new records are being set up in the way of injuring the enemy. A new trail is being blazed in warfare.

Inevitably comparisons have been made with the great battles of the last war. It has been pointed out that little more than an attrition objective was gained for the sacrifice of 410,000 casualties on the Somme, while the Germans even scored on the terrible business of attrition. Yet the complete result of the Ruhr offensive must stand revealed before any comparison with a great land battle can fairly be drawn.

At this stage all that can be said is that the casualty list reads unbelievably small in relation to the colossal results achieved, and that the lost airmen stand out in bolder, more glorious relief in consequence. Taking the start of the Battle as March 3 last, and if we include adjacent centres like Cologne and Krefeld, it does not seem that more than 8,000 or 9,000 have failed to return.

"DR. GOEBBELS VISITS BERLIN AIR-RAID VICTIMS": A German propaganda picture showing Reichs Minister Dr. Goebbels listening to eye-witnesses' reports of victims whose homes were demolished during the last British air raid on Berlin

Here are the principal effects which have been purchased at the above approximate loss—

Germany's war industry, another way of saying her capacity to draw out the struggle; has been permanently maimed. About two-fifths of the Reich's total killing power was contained in the Ruhr Basin which will never again be allowed to produce anything approaching its former output. This main objective has been achieved by

Hitting the great armament works like Krupps, which manufacture and despatch the munitions of war right to the front;

Destroying the plant making the high grade steel, from which come guns, aircraft engines, tanks and mechanisation;

Rupturing the transport and industrial system uniting the hundreds of separate Ruhr factories.

Rail transport is Germany's weakest link and the Ruhr devastation is putting a heavy new tax on it. The region itself is criss-crossed by scores of lines, and rolling-stock, engines, repair shops, stations, bridges, sidings and permanent way have all been battered and battered. But, besides this, there is the new strain being put on the whole Greater Reich system as a result of the evacuation of people and plant from bombed-out areas. "Fear of air raids" income from passenger traffic has gone up by 10 per cent. compared with 1939, although not a single civilian is allowed to travel without State permission.

Two-thirds of the output of hard coal for the whole of Germany came from the Ruhr. In 1942 its production had decreased by at least 14,000,000 tons, and since January last this rate of loss may well have been doubled. The only sure indication is in regard to Italy. Italy derived practically all its coal from the Ruhr, through Switzerland, and the supply is already down by a third.

Armament "tsar" Speer is trying to move elsewhere as much of the Ruhr heavy industry as he can, but an obstacle concerns that area's need for its own special fuel. Silesian coal cannot produce the coke for Krupps steel works. Many smaller factories are being located in the south-east. But what about the bigger ones?

The full effect of the dam-bursting has not yet been felt. Presently there should be a shortage of water, even without the summer being especially dry, and then the vast usage to which water is usually put in the Ruhr will become manifest. Here an extraordinary possibility has to be reckoned with, nothing less than that the U-boats have been withdrawn from the Atlantic, in part, in order that they may combat repercussions of the Ruhr offensive!

U-boats can assist blitzed areas by supplying wireless communication when all around is chaotic ruin: by acting as mobile electric power stations in the room of those exploded ashore; and as emergency fire pumps. In water delivery, a submarine's pumps cannot compete with a shore pumping station, but valuable stop-gap work may be accomplished.

This Battle of Many Objectives is, naturally, absorbing the sick *Luftwaffe*, preventing this from strengthening other fronts such as Italy, the Aegean and Balkans, to the extent the Axis would wish. The Germans themselves admit to concentrating 1,100 fighters and 30,000 A.-A. guns at a time when the *Luftwaffe* is not receiving deliveries to balance losses.

Every way you glance, this attack on the Ruhr has produced vital effect. Thus, visitors to the Rhine carried away as one of their chief memories the exceptional barge traffic—1 m.p.h. upstream, 8 m.p.h. down. A long business, but so economic. Now battering of barge headquarters at Mülheim and Rurhort has put the whole system out of gear. There has been a six days' delay in traffic to Bale, and an even longer interruption in the direction of Rotterdam.

Then there is the evacuation with its repercussions. An enormous migration affecting millions of Germans in one way or another. It is impossible to meet the new calls on housing and transport. The Germans refer to the former crisis as "the housing blockade," a reference to 1918 that should not be lost on us. Only less shattering is the problem set by the widespread destruction of consumer goods, notably as this affects food distribution. On all sides, the destruction of records has put the hastily organised Nazi succour services to the most severe testing.

Goebbels tries to convince Germans that they are all one family, united and in the same boat, but that doesn't stop Germans in Württemberg, Saxony and Bavaria from scowling at the bombed-out arrivals from Prussian Westphalia, a pretty grim lot even without their being bombed out.

This is only a part of the general undermining of civilian morale. It is true enough that our jingo-boasters spoke too soon, and that others can "take it" besides residents of these islands. Nevertheless, we were sustained in 1940-41 by the knowledge that things could only get better if we continued to exist at all. The Germans know that matters can only get steadily worse, while they also know that they started it. That fact *must* be percolating despite everything the Nazis do to smother it. It has been in the neutral prints which the Germans can peer into.

Incidentally there is the effect of extermination bombing on front-line soldiers hundreds of miles from home. This lonely, loathed German soldier gradually grows aware of the terrible events striking down dear ones in the homeland. These soldiers grow sick at heart, muttering: "We shall have no Germany to return to." Do robots crack at some point? Another thing awaiting answer.

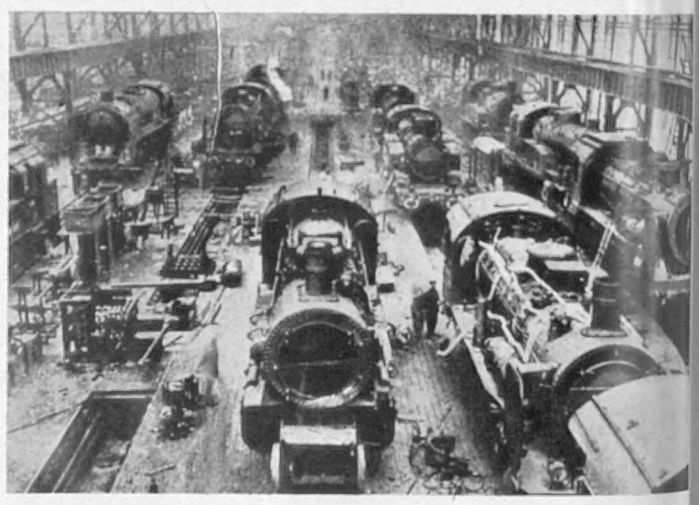
What of the Battle's effect on satellites, notably Austrians and Hungarians? Neither of these desire substitute factories to be visited on them in place of those demolished in the Ruhr. They know too well what that will bring: Allied bombers, probably from the south, over their hitherto immune lands. Nor do they want North German refugees thrust on them, unlikeable characters eating into scant supplies, crowding the house, and spreading deep gloom. Simply by making Germans more and more unpopular in the vassal states, not to say, showing them up as harbingers of disaster, the Ruhr offensive does much.

And I was overlooking another thing that it does. As the only sure means of lessening the Allied aerial onslaught, the Germans have had to switch heavily to the production of fighters, which has meant an enforced neglect of bombers, which partly accounts for the absence of raids here. I cannot believe the *Luftwaffe* will not yet get in some vicious smacks, maybe with gas and kindred innovations. But this coming winter may well be the last opportunity for the enemy. His revenge facilities may otherwise be too heavily bombed.

Finally, the Ruhr onslaught is closely related to the Second Front in the West. Not only must it sensibly reduce eventual Allied losses in a land attack, through a falling-off in German weapons of war. A whole main supporting region is being laid waste plumb in rear of the German armies holding Northern France and the Low Countries.

Did I say "finally"? Why, this amazing Battle is even having an influence on the course of the future peace-making.

It is the purpose of the United Nations to stop German war production. Good. In the Ruhr are 500 square miles hitherto preponderantly devoted to industry either directly of a military character or capable of being adjusted to it. Why allow the Ruhr ever to be rebuilt again in anything like the same conditions as those which drew to it a 5,000,000 population? It is being put out of action—the hive that has produced two-

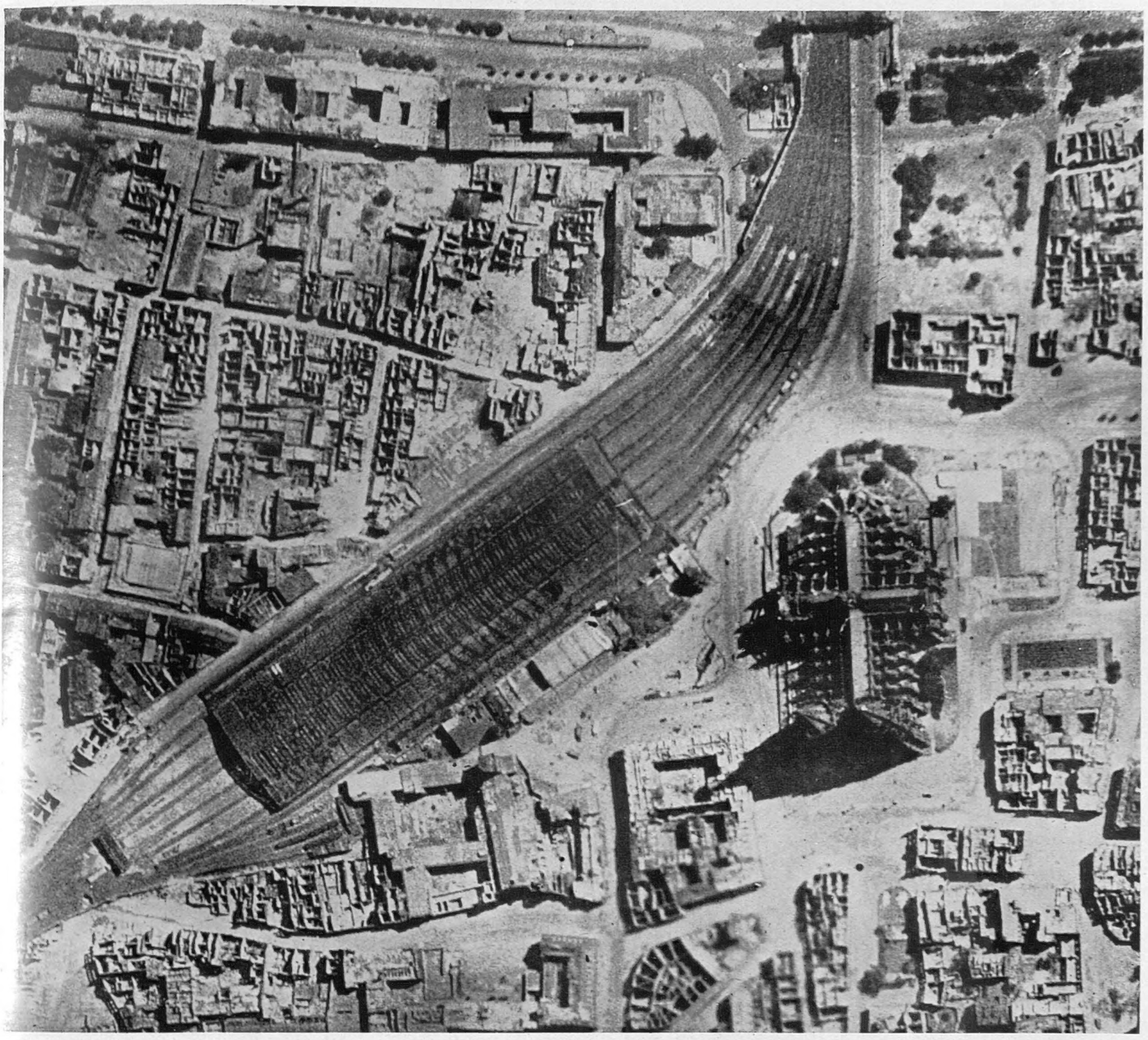


IN ONE MONTH ALONE, THE R.A.F. BLEW UP 100 NAZI TRAINS: Here are some of the repair work they caused. The "train-busters" in their expeditions over Occupied territory have provided still another headache for the organisers of the German transport systems. This picture (received through a neutral source) shows the congestion in an enemy engine-repairing shed where some of the vehicles damaged by the R.A.F. have to be rebuilt. On occasions, too, the R.A.F. have also bombed the repairing sheds, thus increasing the congestion and chaos all round!

fifths of Germany's killing power. Why not draw a line round it and keep it out of action. All save the pits, and specific, controllable industries and plants? By so doing, we should go far to meet a problem that beat us last time—the effective disarming of Germany.

Again, take all this talk about "re-educating" the Germans. What finer re-education than "this horrifying summer," to use the German's own definition? It is utterly true to say that the Germans have been bloodthirsty savages, raping other peoples' countries, largely because their own country has escaped for so long. Not since the Thirty Years War have they collected anything like this horror. It will teach them better than anything else that aggression does *not* pay.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this publication should not be taken as an indication that they are necessarily available for export



COLOGNE CATHEDRAL AND THE MAIN RAILWAY STATION ALONGSIDE IT: This picture, and the others of the series, prove how slight was the damage to the Cathedral—and how heavy by contrast has been the damage to the Industrial Sections of the City

The CITY of COLOGNE TO-DAY

Reconnaissance Pictures taken on July 4, and recently released by the Air Ministry, after the R.A.F.'s Heavy Attacks on June 28-29 and July 3-4

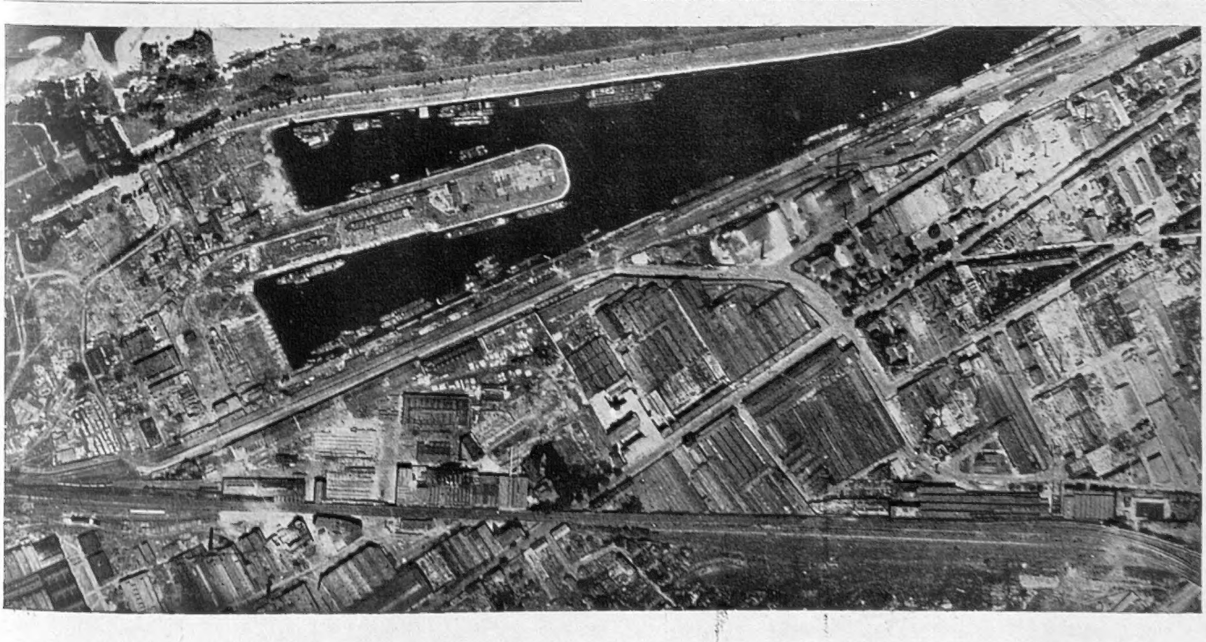
(See also two succeeding pages of this issue)

Nazi reports, issued immediately after these big raids, claimed that heavy bombs had caused severe damage to the Cathedral. R.A.F. photographic interpretation experts say that there is evidence only of damage to the roof of the north transept, and no signs of other damage to the structure.

This is all the more remarkable in view of the devastation caused by this and previous raids in the immediate neighbourhood of the Cathedral, and throughout the central area of the town, where it is estimated that 1,000 acres have been devastated.

There is extensive damage at the main railway station almost adjoining the Cathedral. The roof of the station has been burnt off, and the railway offices have suffered. There is heavy damage, too, among the buildings and installations at the Gereon Railway Yard.

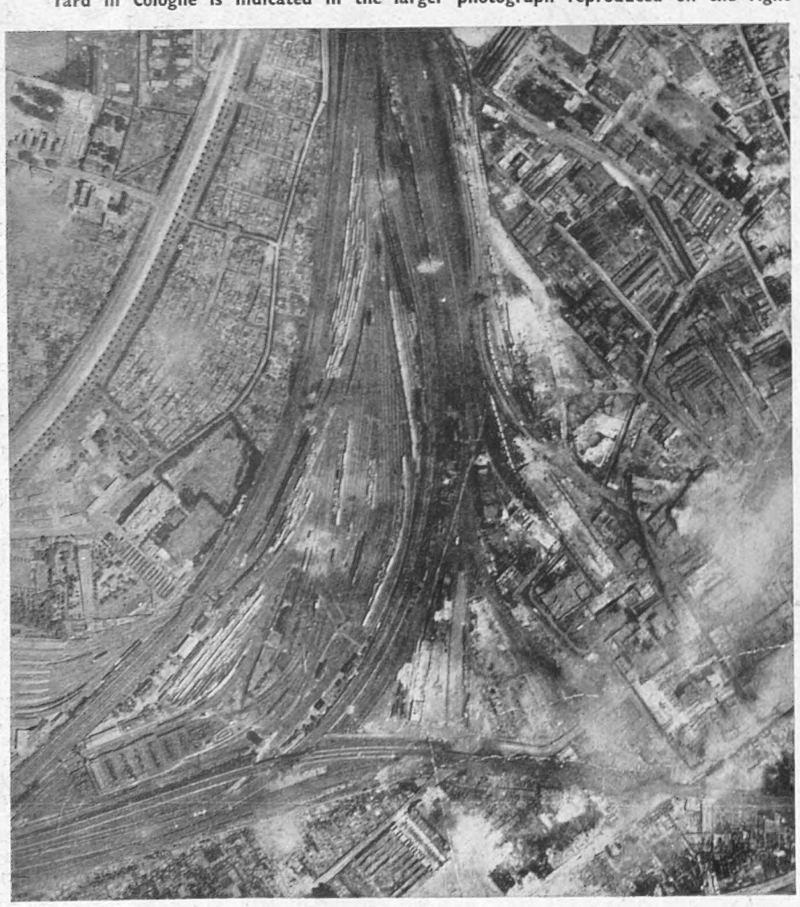
Industrial damage is particularly heavy in the Kalk and Deutz districts on the east bank of the Rhine. Plant of the Klockner Humboldt-Deutz Motoren A.G. concern at both Deutz and Kalk has suffered severely. This firm has been providing many Diesel engines for U-boats.



On left—**In this area of heavy industrial damage, the Deutz plant of the Klockner Humboldt-Deutz concern has been hard and heavily hit. This plant is contained within the "V" formed by the wharf wall running from the bottom left to top right, and the railway line running across the bottom of the photograph. Other factories, warehouses and industrial targets have also been badly damaged, particularly around the wharves at the left**

The CITY of COLOGNE TO-DAY—*(cont.)*

THE HUGE GEREON RAILWAY YARD, where extremely serious damage was caused during the R.A.F. raid on the night of July 3-4. This picture reveals the present state of the buildings, rolling-stock and installations. The exact location of the Gereon Yard in Cologne is indicated in the larger photograph reproduced on the right



THIS EXTENSIVE AND HEAVILY DAMAGED AREA AT KALK (on the east bank of the Rhine) includes the Marshalling Yards and, to the right of them, the Kalk Chemical Factory, which has suffered severely. The many white patches, particularly noticeable in the yards and among rolling-stock there, mark where high-explosive bombs have burst. The east bank of the Rhine is opposite to that portion shown in the big photograph on this page

THE CENTRAL TOWN AREA IN COLOGNE, WHERE 1,000 ACRES HA[illegible] despite Nazi statements, has received only slight damage, but the sta[illegible] trace of damage, although completely surrounded by devastated p[illegible]

It is now confirmed that the last two attacks on Cologne were successful. In the first raid, when our aircraft attacked targets on the west side of the Rhine, the great Gereon railway yard, the main railway station and many industrial plants were severely damaged. In the second raid, when the objectives were Kalk and Deutz, two districts on the east side of the river, heavy industrial damage was done throughout the area attacked.

This is the conclusion of the R.A.F. staff of experts who have been examining the photographs taken by our reconnaissance aircraft after the two attacks. The story of the devastation is by no means complete, and the photographic experts have not yet had time to give more than a general idea of the damage caused by the first raid. As for the second raid, the reconnaissance pilot found large industrial areas on the east side still covered by clouds of black smoke. But it is known already that the Humboldt-Deutz factories—works of the highest priority—were very [illegible] damaged.

Thirteen months ago Cologne [illegible] objective of the first 1,000-bomb[illegible] and the damage was described aft[illegible] to quote the words of the official [illegible] "on a larger scale than anything [illegible] in any German city." In one wee[illegible] year—the first attack was on the [illegible] June 28 and the second on the [illegible] July 3—well over twice the weight [illegible] has been dropped as was dropped [illegible] 1,000-bomber attack, and the de[illegible] has been far greater.

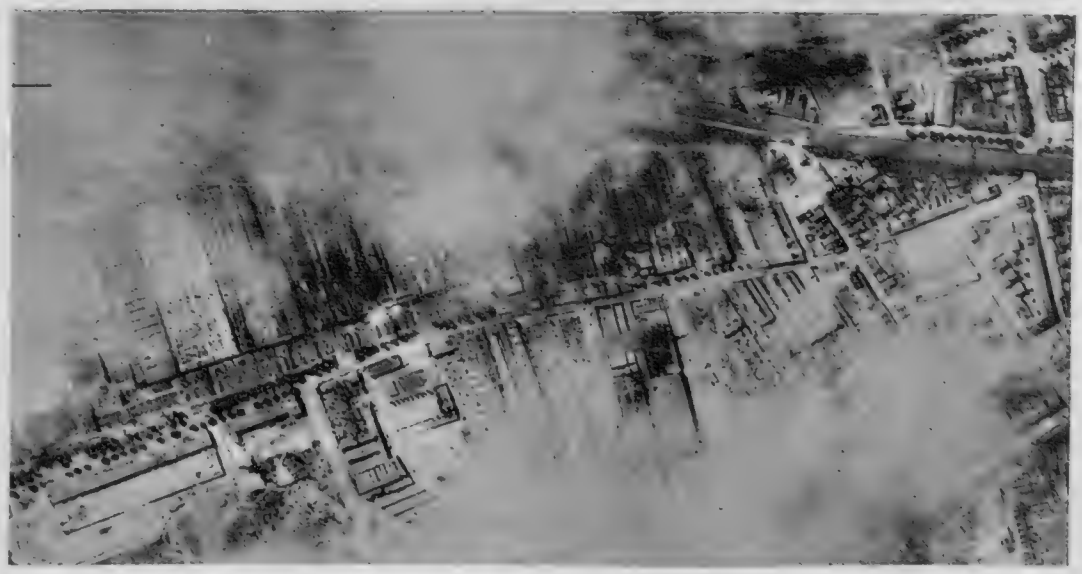
There were two huge factories [illegible] to Humboldt-Deutz in Cologne, [illegible] have been damaged in the raid. T[illegible] pretation experts say that, despite [illegible] smoke that still hung over the fac[illegible] the day after the raid, the pho[illegible] show that a great many buildings [illegible] in the larger of the two Humbol[illegible] works; over the second works the[illegible] smoke and heavy damage can be [illegible]

DEVASTATED : The Cathedral, in the top centre of the picture, stands out prominently ; the main railway station is immediately to its left. The former structure, been badly hit. Another striking feature of this photograph is that the imposing Courts of Justice (below the Cathedral in the centre of the picture) shows no This remarkably clear photograph was taken on July 4

seen. Humboldt-Deutz has played a leading part in the U-boat construction programme, for it was from the two Cologne factories that many of the submarine Diesel engines have come. The damage makes it certain that, at the very least, production at Cologne will have been seriously affected, and this in turn must affect the whole U-boat programme.

Many other factories hit have not yet been identified, but it is known that the Citroen Werk, the Mannesmann Rohren and Eisenhandel iron and steel plant, the West Deutsche Waggonfabrik, a plant of the Vereinigte Stahlwerke combine, and a large chemical factory have all been hit. Railway damage is severe. The roof of the main railway station has been burnt off and the station offices damaged. There is extremely serious damage in the huge Gereon railway yard. Two engine sheds and a very large building have been destroyed ; another building of considerable size has been damaged.

Preliminary examination of the photographs indicates that the north transept of the Cathedral has sustained some roof damage, but the rest of the structure appears to be unaffected.



On right—**When this photograph was taken, smoke from still-smouldering fires largely obscured the Deutz plant of the great Klockner-Deutz Motoren A.-G., which is engaged is producing Diesel engines for U-boats. It is apparent, however, that this factory has sustained severe damage**

HOW THE VICTORIA CROSS WAS WON

DURING THE NORTH AFRICAN FIGHTING, ON ST. GEORGE'S DAY—APRIL 23

—by Major John Thompson McKellar Anderson, D.S.O., of the Argyll and Sutherland Highlanders

Longstop Hill is a height which lies six miles to the north-east of Medjez-el-Bab, west of the city of Tunis. During the campaign in North Africa, it witnessed some of the bitterest fighting of the whole war, for it was a key position which the Germans fought fiercely to hold. This part of the country proved extremely difficult terrain for the First Army; and in the winning of the Hill two V.C.s were won—both on April 23 last, St. George's Day.

The picture by Mr. Osmond above shows how one of these was gained by Lieut. (Acting Major) Anderson, D.S.O.

THE ATTACK ON LONGSTOP HILL: LIEUT. (ACTING MAJOR) ANDERSON TAKES [illegible] assault he received a leg wound: in spite of this, he carried on and finally capt[illegible] the struggle, and [illegible]

Over a period of five hours, this officer led the attack through intense enemy machine-gun and mortar fire. As leading company commander, he led the assault on the battalion's first objective, in daylight, over a long expanse of open, sloping hill-side and most of the time without the effective cover of smoke. Enemy infantry opposition was most determined, and very heavy casualties were sustained, including all other rifle company commanders, before even the first objective was reached.

On reaching the first objective and still under continual enemy fire, Major Anderson reorganised the battalion and rallied men whose commanders, in most cases, had been either killed or wounded. The commanding officer having been killed, he took command of the battalion and led the assault on the second objective. During this assault he received a leg wound, but in spite of this he carried

***On right*—Lieut. (Acting Major) John Thompson McKellar Anderson, D.S.O., of Princess Louise's Argyll and Sutherland Highlanders**

THE COMMAND OF THE BATTALION AND LEADS HIS REASSEMBLED MEN TO THE ASSAULT THROUGH INTENSE ENEMY MACHINE-GUN AND MORTAR FIRE. During this the hill with a total force of only four officers and less than forty other ranks. Major Anderson was the first to enter enemy gun positions on several occasions during conspicuous gallantry was awarded the Army's most coveted decoration—*Drawing by Edward Osmond*

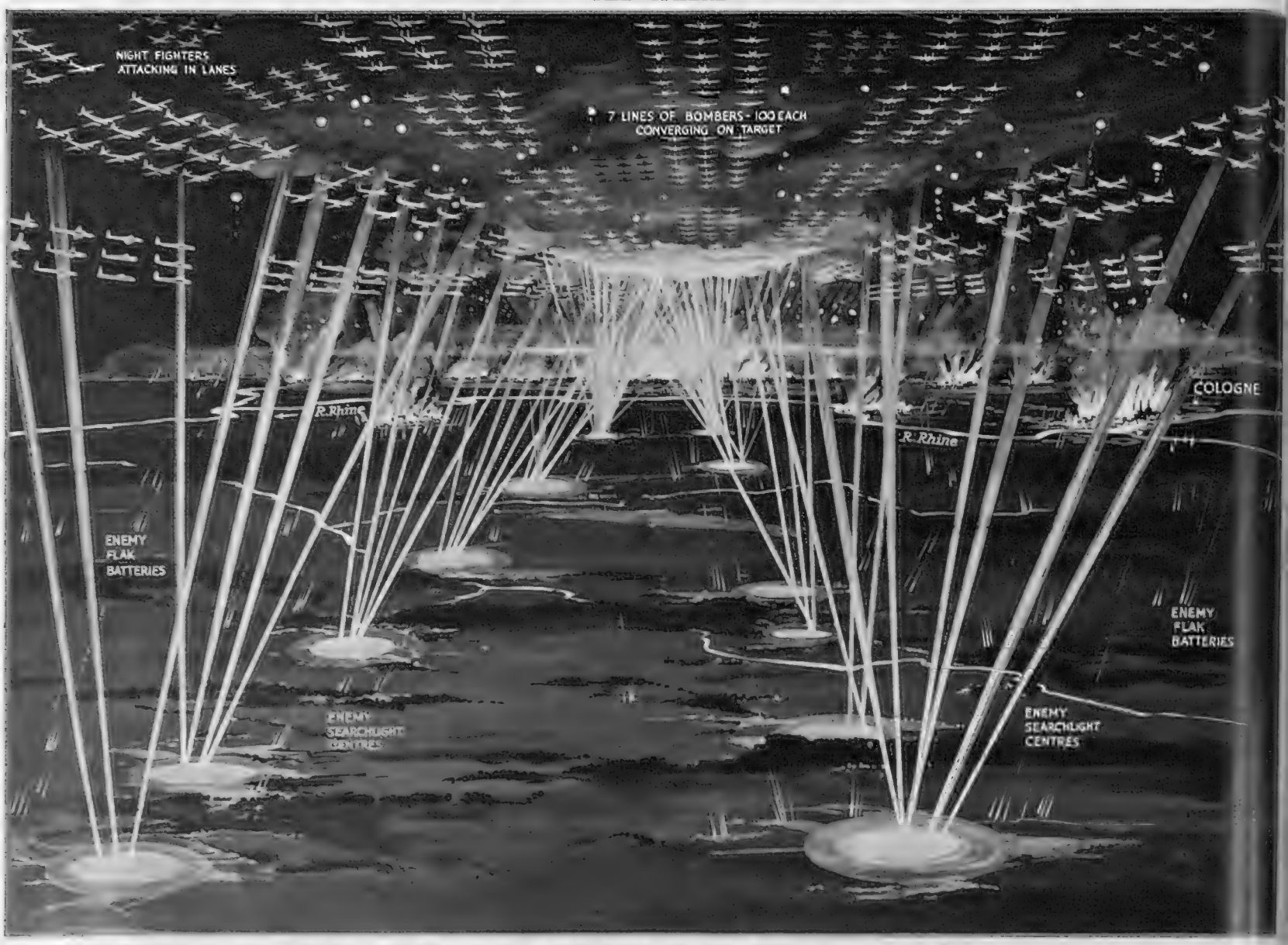
on and finally captured Longstop Hill with a total force of only four officers and less than forty other ranks. Fire had been so intense during this stage of the attack that the remainder of the battalion were pinned down and unable to advance until Major Anderson had successfully occupied the hill.

During the assault he personally led attacks on at least three enemy machine-gun positions and in every case was the first man into the enemy pits; he also led a successful attack on an enemy mortar position of four mortars, defended by over thirty of the enemy.

Major Anderson's force on the hill captured about 200 prisoners and killed many more during the attack. It is largely due to his bravery and daring that Longstop Hill was captured.

The new V.C. is twenty-five years of age: after winning the Army's highest award for bravery in April, he was given the D.S.O. the following month! He enlisted in the Army in September 1939, was then commissioned in the Argyll and Sutherland Highlanders, and later served in France. The other V.C., Lieut. W. A. S. Clarke, of the Loyal Regiment (whose award was made known at the same time as Major Anderson's), was killed outright during the action which gained him his Cross

***On left*—An impression of Longstop Hill, where Major Anderson gained his V.C. on St. George's Day 1943, and where some of the bitterest fighting of the whole campaign took place**



THE CONCENTRATION OF THE ENEMY'S DEFENCE AT THE APPROACHES TO THE RUHR: SEARCHLIGHTS AND GUNS INNUMERABLE ARE MASSED ON THE GROUND, whilst the air swarms with defending night-fighters. Our bombers are depicted as approaching the Ruhr in seven lines of 100 aircraft each: Cologne lies on the right, the River Rhine stretches across the whole scene, and in the distance is the industrial heart of Germany—*Drawing by E. G. Lambert*

THE TERRIFIC SIZE OF THE NEWEST NAZI GLIDERS: This is the wreckage of one of the German six-motor gliders which were so prominent during the campaign in Tunisia: it will be remembered that numbers of them were shot down over the Sicilian Narrows as they attempted to reinforce the defeated Afrika Korps. This glider must be towed off the ground, but once it is airborne it can proceed at 150 m.p.h. under its own power. The specimen above was found by our men as they entered the city of Tunis: it had been wrecked by the retreating Nazis

MASSED ASSAULT ON GERMANY

A Visualisation of what Our Onslaughts on the Ruhr and the Rhineland Look Like to the Bomber Crews

—Special Drawings by Sphere Artist

In an attempt to save their chief arms centres in the Ruhr, the Germans appear now to be concentrating all their available defences on that important district. Our pilots have reported that during recent heavy raids they have had to battle their way through the heaviest barrages yet: supporting the guns are hundreds of massed searchlights; in addition, swarms of night-fighters are operating (the Germans have recently stated that there are 1100 such aircraft concentrated in or near the Ruhr alone). These fighters attack the bombers continuously from the moment they cross the French coast on their outward journey till they recross it on their return.

As an instance of what our bombers endure, here is a description by a pilot who took part in a recent raid on a Ruhr town, when more than 700 bombers—mostly four-engined—participated. Carried out on one of the shortest nights of the year, the 700 had less than four hours in which to get to their target, queue up to bomb, and get back before dawn. But the so-called hours of darkness did not really exist, for a brilliant moon made the night a fighter's paradise. As the first bombers approached they saw the huge belt of Ruhr defences going into action. The searchlights and big guns opened up, and further away the crews could see searchlights in a number of towns sweeping the sky.

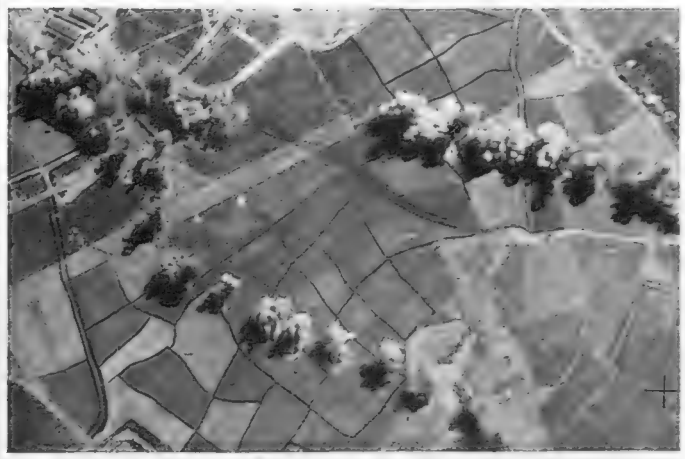
When our men attacked the big steel and textile town of Krefeld, the cones of searchlights wavered and broke up: but there were more night-fighters up on this occasion than have been encountered for some time, and many combats were reported in the bright moonlight along the route.

"Until recently the barrages were clearly defined," said one pilot describing his own experiences over the Ruhr. "Now one has to fly through continuous fire for miles before reaching any Ruhr target. The anti-aircraft defences are much deeper than they have ever been, but our great concentrations make predicted fire impossible. . . ."

AFTER A BOMBING RAID ON WILHELMSHAVEN: The crew of a U.S. Fortress three minutes after their aircraft had sunk in the North Sea. This crew had destroyed eleven enemy planes during the raid before having to ditch their own aircraft—a new record bag. It was 30 hours before the men were rescued by an R.A.F. launch

THE BOMBING OF WUPPERTAL: AN IMPRESSION OF THE SCENE IN THE NARROW VALLEY, which has Barmen and Elberfeld at either end, on the night of June 27-28, when wave after wave of big bombers went over. This picture shows the scene as a low-flying Lancaster began its return journey home—*Drawing by Roland Davies*

The bombing of Wuppertal (*see left*): Wuppertal is strung out on each side of the Wupper River, and stretches up a fairly narrow valley for about ten miles. At its narrowest, just between the twin towns of Barman and Elberfeld, this valley is only a mile and a half wide, the whole of Wuppertal being shaped rather like a dumb-bell. The place is intensely congested, and is usually covered with cloud or mist on many days of the year. The area is packed with small factories, which had been turning out components to feed the large neighbouring industries in the Ruhr. In the attack carried out on the night of June 27-28 (mostly by large four-engined bombers), the Germans claimed to have shot down fifty-seven: actually the figure was thirty-three



BOMBING A NAZI FIGHTER NEST NEAR BREST: The airfield at Brest-Guipavas is used as a base for *Luftwaffe* fighters: it was attacked by R.A.F. Mitchell bombers (escorted by fighters) in daylight on June 24. In this photograph, taken from one of the attackers, approximately thirty bursts are seen, with a concentration (top left) almost smothering a hangar and its tarmac apron. One bomb has fallen on a runway—the broad strip running from middle left towards top centre—and two sticks, each of eight bombs, are bursting across the landing area

Below—**CLOUD INFLUENCE ON SEARCHLIGHT EFFICIENCY: This is becoming a factor of importance now that our onslaughts are made in every type of weather.**—*Drawing by W. G. Whitaker*

Weather seems to be playing a less hindering part in our present bombing of Germany, as on a number of occasions recently heavy attacks have been made during very overcast nights. On such occasions the guns on the ground are robbed of their chief aid—the searchlights, whose beams cannot pierce the "ceiling": the guns, on such a night, fire "blind," and pilots have reported that their shell-bursts seem to cover the sky over the town under attack. On some occasions, all that our crews have reported is that, as the raid ended, the cloud tops reflected the glow of large fires: they did not even see their bombs burst, for the cloud diffused the bright beams of the searchlights

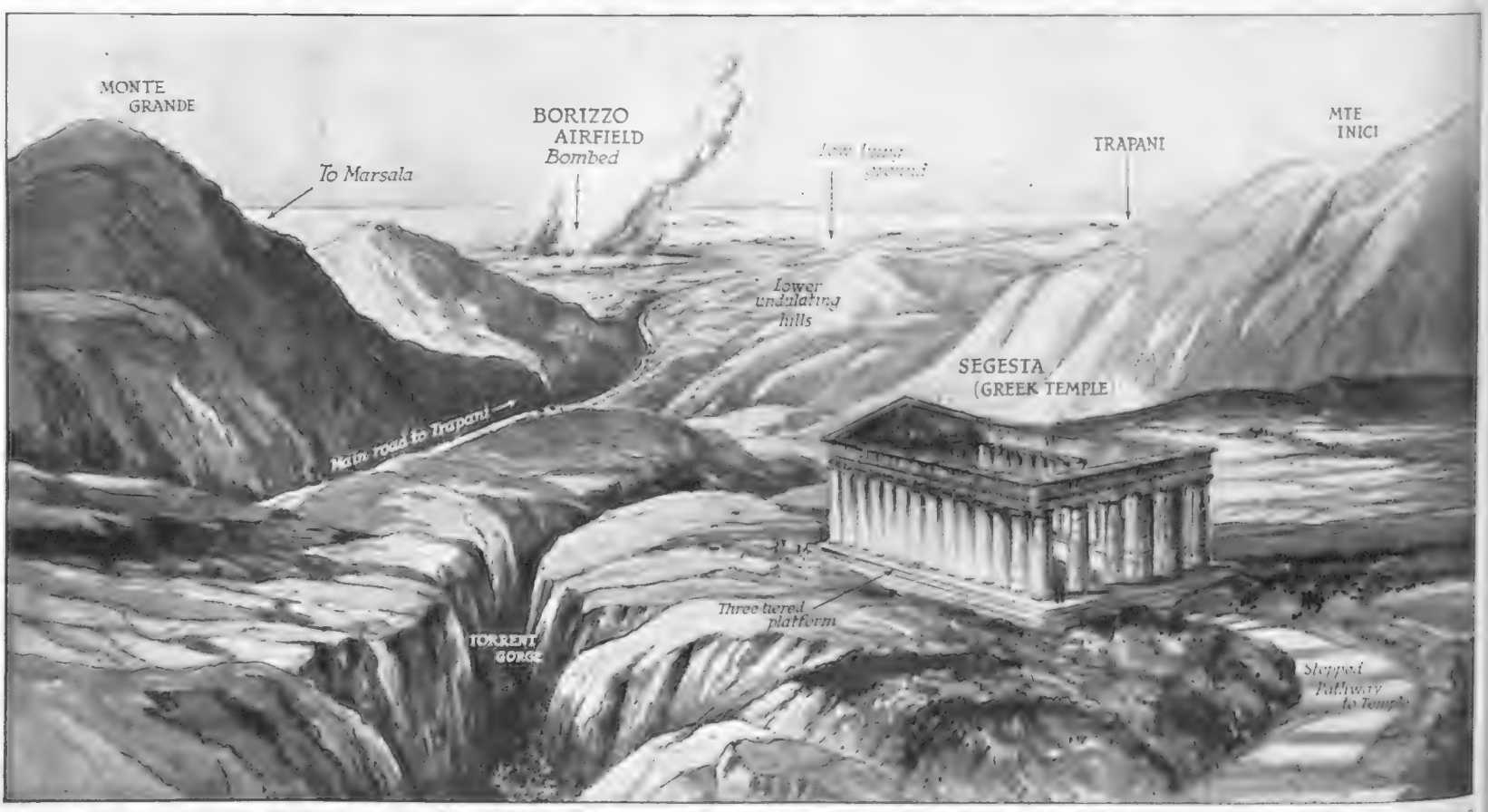
LEGHORN, KEY SUPPLY CITY FOR CORSICA AND SARDINIA AND NAVAL BASE SECOND ONLY TO GENOA, is bombed by 100 Flying Fortresses from North Africa. Vast clouds of thick smoke gave indication of the damage wrought at this port which is controlled by the Ciano family—*Drawing by W. G. Whitaker*

"ALL ITALY in the FRONT LINE"

No Place in that Country is now Beyond the Reach of the R.A.F. These Drawings Depict Two Recent Raids in the North and South

The heavy raid on the port of Leghorn on June 28 must have brought home to the Italians that they are now in the front line, no matter what part of the country in which they live. The Flying Fortresses which took part went 550 miles across the Mediterranean and came in from the sea. They found a tight-packed city clustering round the outer port, which is now second only to Genoa in importance. Bombs were dropped on the big oil refinery, one of the biggest in Italy, on the docks, shipbuilding yards and railway yards. The Maritime station in Leghorn is built out on the docks; that, and the main railway station, a little inland, could not have been missed. Leghorn is a seaport of 130,000 inhabitants: it is the chief port of supply for Corsica and Sardinia; and it is also the centre of influence of the Ciano family. Only once bombed before—and that not seriously—the chief point about the June 28 raid is that it shows the Italian people far more clearly than any broadcast threat that the whole country is now truly at the mercy of the Allied Air Forces.

At the other end of Italy, just before the Invasion, air attacks were carried out without cease: the one depicted in the drawing below is that against the Borizzo Airfield, in the western tip of the island. This is another of the dramatic spots in which Sicily abounds. Gazing out to sea from the plateau of Segesta is a deep gorge which adds to the lovely setting of the Doric temple. The latter stands on a three-stepped platform which, like the main pillared structure, was never fully completed. Even in its unfinished state, however, the temple is one of the finest in existence. The main road to Trapani crosses the view from left to right: on the right Mte. Inici rises on the further side of the River Caldo: to the left the scene is dominated by the bold mass of Mte. Grande

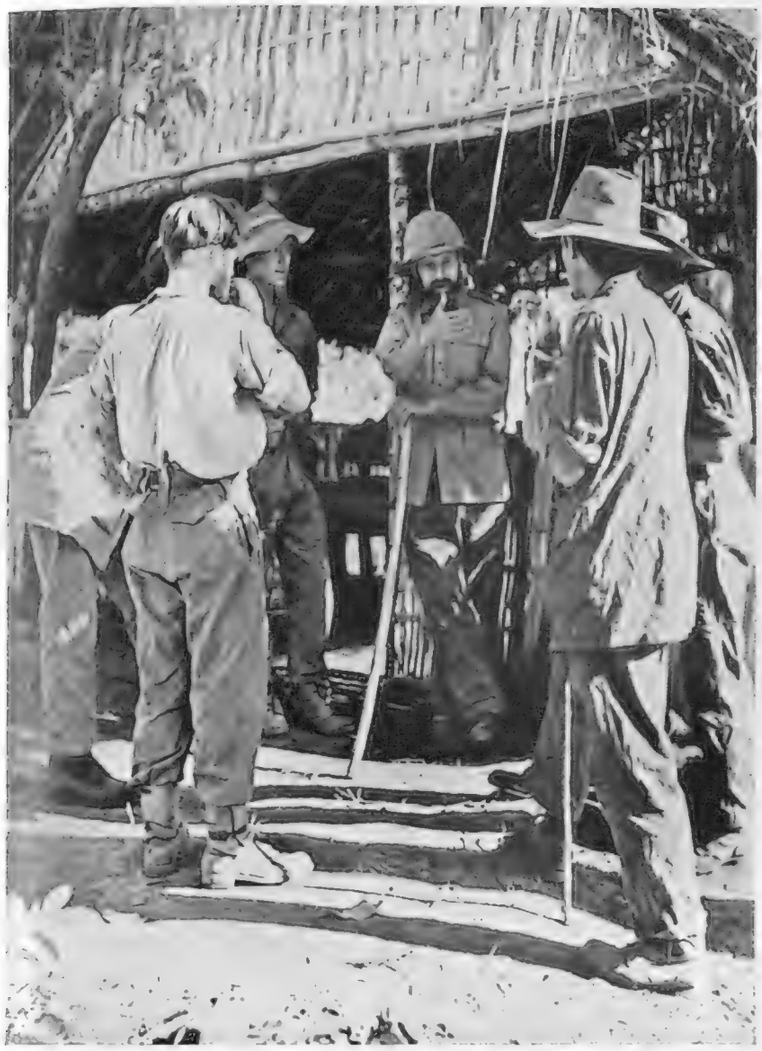


BEFORE THE INVASION—THE BOMBING OF BORIZZO AIRFIELD IN THE WESTERN TIP OF THE ISLAND OF SICILY, as viewed from the famous Greek Temple of Segesta. Like most of the scenery on the island, this is a dramatic spot: in front of the ancient Greek temple is a deep gorge down to the sea, which commands a view of the Sicilian coast stretching from Trapani to Marsala—*Drawing by Percy Horne*

GUERILLAS IN THE BURMESE JUNGLE

The First Pictures of the "Chindit" Force, Under Brigadier Charles Orde Wingate, Which Spent Three Months Behind the Japanese Lines as a Roving Commando

—As chronicled by William Vandivert, War Correspondent



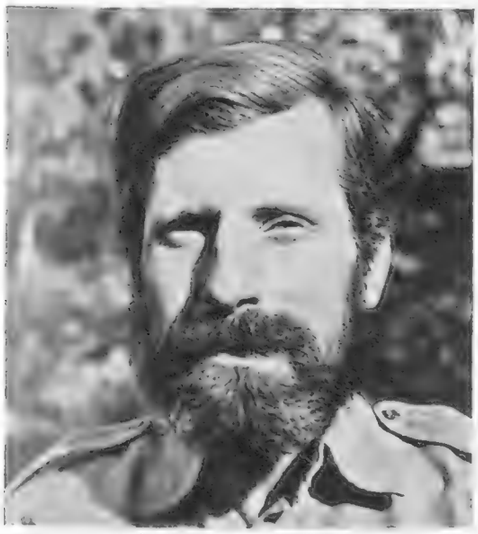
THE LEADER OF THE EXPEDITION, BRIGADIER ORDE CHARLES WINGATE, talks to his men at the Transit Camp of an Outpost on the Burma-Assam border. The Expedition lasted for three months in Japanese-held territory in Burma

MAJOR BERNARD FERGUSON, of the Black Watch, who led one of the "Chindit" columns

WING COMMANDER W. H. BUNBURY, D.F.C., A.F.C., who commanded the Supply Dropping Squadron. He has 12,000 flying hours! Formerly he was an Airways operator in India

MR. WILLIAM VANDIVERT, War Correspondent, complete with Gurkha hat: he took the pictures reproduced here

LIEUT. ALBERT TOOTH, aged twenty-five (who comes from Manchester): Liaison officer with a party detached from the Brigadier's column. He swam the Irrawaddy after his boat had capsized, dragging with him a corporal who couldn't swim



BRIGADIER WINGATE, leader and inspirer of the whole undertaking, with his magnificent beard! A picture taken on his return to Headquarters

One of the best-kept secrets of the war was disclosed by G.H.Q., India, towards the end of May, in an official announcement which gave details of a long-range jungle expedition, led by Brigadier Orde Charles Wingate, of Abyssinian fame. The expedition was supported entirely by air: it spent three months in Northern Burma as wreckers in the midst of wild, enemy-controlled territory. Operating in several columns—three of them British and the others Gurkha, with detachments of Burma Rifles, serving the purposes of intelligence and reconnaissance—the Wingate brigade penetrated more than 300 miles across the jungle ranges and valleys: two big, swift rivers, the Chindwin and Irrawaddy, were crossed, and among other achievements the Myitkyina railway was cut in as many as eighty places.

The Wingate Expedition was brilliantly planned and rigorously trained for, and it was attended by the necessarily limited success expected of it. It is a glowing story of courage and endurance in troops who were by no means specialists, of bold decisions by an outstanding leader and a carefully selected band of British officers, and of almost perfect timing with the R.A.F., with whom constant touch was maintained by wireless, and whose pilots had the task of dropping supplies—not on static positions, but on columns whose location generally in the thick jungle changed from day to day and by no means followed a fixed course.

They were accompanied by R.A.F. liaison officers—hard, fit young men who went in and came out without any previous training—and some of the columns marched a thousand miles or more at an average rate of fifteen miles a day, which in these mountainous jungles is worth fifty in the open. It is a story of a hundred facets, whose broad outlines are drawn in the official report. In the words of one of the column commanders, there were times when more excitement was experienced in twenty-four hours than in a lifetime, and he was a man who had been in Tobruk.

Until the brigade finally dispersed, Brigadier Wingate controlled his columns throughout by wireless, and usually they were many miles apart. His praise was warm for the supply-dropping of the Royal Air Force, and he has stated that the fact that the operation had been carried out by ordinary troops after a period of training showed what could be done. This mission was largely experimental, but experts are satisfied that it fully proves the value of independent long-range columns operating as part of a general offensive.

The remarkable series of pictures reproduced on these four pages were taken by Mr. William Vandivert, a war correspondent who flew into Burma with one of the R.A.F. supply planes

COMING BACK FROM THE INTERIOR: A jeep car carries Brigadier Wingate (seated, left front) from the extreme head of the military road which runs into Burma. He had just arrived at jeep-head on the way out, and had taken motor transport from there

GUERILLAS IN THE BURMESE JUNGLE *(cont.)*

How the Men of Brigadier Wingate's Force were Supplied from the Air by the R.A.F.

BACK AT THE AIR BASE IN INDIA : Indian troops fold eighteen cotton parachutes, made locally, into packs : these were then attached to the supply loads for dropping to the Chindits in the jungle

BEFORE THE RELIEF PLANES SET OFF to drop supplies to the memb of the expedition, Indian troops prepared the supply packs—fo ration-tins going into each canvas bag. The parachute pack wa on top, and a bag of straw was tied to the bottom to take the sho

PREPARING THE RATION-TINS : each of these held ten days' para-troop rations. These included biscuits, dates, cheese, sugar, salt, tea, matches, chocolate, powdered milk and cigarettes. The tins were dropped in bags from the R.A.F. supply planes

THE CREW OF THE R.A.F. RESCUE PLANE, after their rec from the first and unsuccessful attempt to bring the wounded. At the second attempt the plane bro out the sick and wounded to safety. From left right are : Wing Commander W. H. Bunbury, Squad Leader Fielden, Flying Officer Val Bary, second pilot, a Flying Officer David (" Lumme ") Lord, pilot

R.A.F. PLANES OFF TO DROP SUPPLIES OVER THE JUNGLE. The aircraft are in flight over a Burmese mountain range and are approaching a clearing in the dense jungle to drop supplies for the Chindits and to pick up the sick and wounded for transport back to India

A SUPPLY TRIP ON EASTER SUNDAY. Piling the bo ready for them to be kicked through the aircraft's do On the " green " signal, the two men on the right fro while the rear man kicks and spills out the

DOWN GO THE PARACHUTE LOADS TO THE MEN IN THE JUNGLE. Frequently the men of the Chindit force went without food, and lived on whatever they could find until supplies could be dropped to them by parachutes in the jungle clearings

A SIGNAL FROM THE GROUND TO THE AIR. When this picture was taken the guerillas had already been two days without food. By gathering up the parachutes dropped previously they were able to spell out the message: "Plane land here now"—indicating that a safe runway had been roughly cleared in the jungle below

AFTER THE PLANE HAD LANDED, THE SUPPLIES ARE RUSHED TO COVER. Having received the signal seen in the upper picture, the R.A.F. supply aircraft did land. The ground troops hastily removed their fresh stores to a place of safety in case the landing had been observed by the Japs, who lay on every side

MORE SUPPLIES ARE DROPPED BY PARACHUTE. This picture also gives a good idea of the densely wooded hill-slopes amongst which the Chindits had to force their way through the heart of the jungle

ON THE LANDING GROUND IN JAP-HELD TERRITORY, after the rescue plane had touched down. Flying Officer Michael Vlasto, who piloted it, is having a last-minute talk with Major Scott, commanding officer of the column, before climbing aboard for the return journey

GUERILLAS of the BURMESE JUNGLE (cont.)

Some of the Men who Took Part in the Expedition

THE CREW OF THE RESCUE PLANE which brought back the seventeen sick and wounded to India. From left to right, they are—Flight-rigger Sergeant Charles Alfred May; Flying Officer Michael Vlasto, pilot; William Vandivert, war correspondent, who took the pictures reproduced here; Sergeant-Pilot Frank Murray, second pilot; and Sergeant Jack Reeves, of the R.C.A.F.

EN ROUTE TO A BRITISH BASE HOSPITAL IN BURMA. These men, through wounds or sickness, were forced to give up: they were evacuated by air, after a landing in the jungle by the rescue plane

ON THE LANDING GROUND IN BURMA, after their return to safety. R.S.M. J. Livingstone and C.S.M. Richard Cheevers pose by the plane. Cheevers said that the tommy-gun had almost grown on to him!

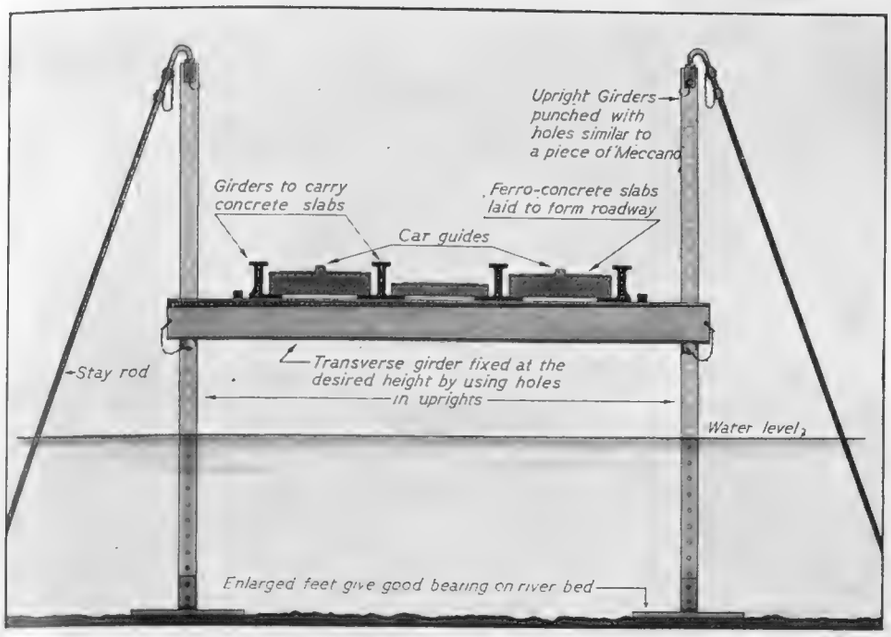
WITH NO HAT, one of the "Chindit" force shields his head from the strong sun with his pack after his return

FLIGHT-SERGEANT ALAN FIDLER, R.A.F. (who comes from London)—A communications man attached to one of Brigadier Wingate's columns in the Burmese jungle

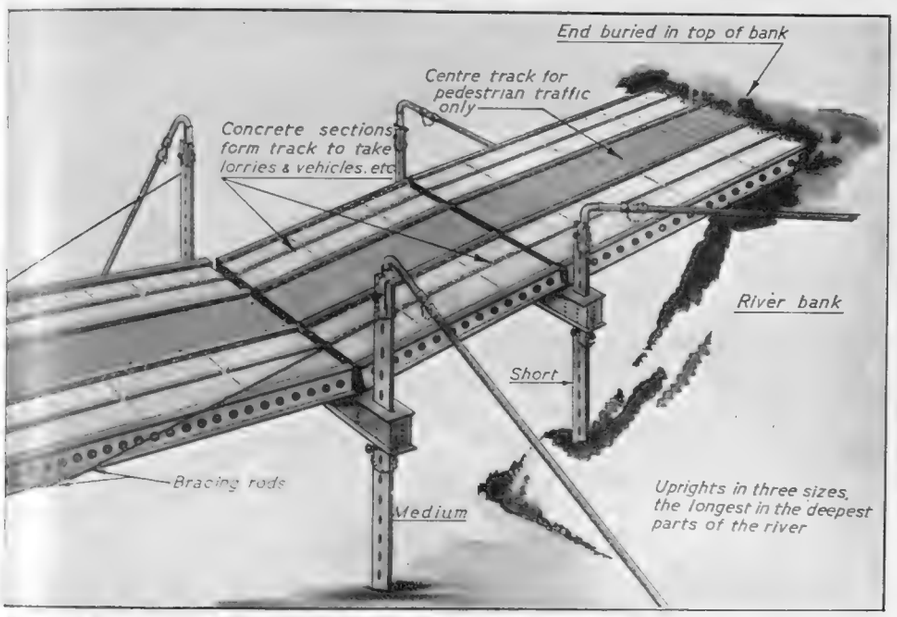
FLYING OFFICER MICHAEL VLASTO, R.A.F., who flew the C.47 rescue plane in and out, bringing supplies and picking up the sick and wounded. He describes himself as a "jute wallah," and his peacetime job as buying jute in Bengal. He used to belong to the Bengal Flying Club, and now has 1,200 hours flying time. He comes from Henley-on-Thames, is unmarried and is regarded as one of the best pilots in the Supply Dropping Squadron

LANCE-CORPORAL FRED NIGHTINGALE, of Lancaster, one of the rescued men photographed in the aircraft which brought him back. He kept moving with his column, although he thought he would have to quit on the last day's march

TATTERED AND BEARDED, with an emergency bandage on his wounded hand, Private John Yates, of Manchester, smiles from his seat in the rescue plane which took him from the Burma jungle to a British base hospital after his evacuation from the jungle



THE "MECCANO" PRINCIPLE EMPLOYED BY OUR SAPPERS: By methods such as this a new bridge can be run up very quickly from standardised materials (See accompanying article)



HOW THE ENDS OF THE BRIDGE ARE SECURED TO THE BANKS; and the shorter "Meccano" sections which go to form the slope over the river—Drawings by B. C. Wood

"MECCANO" BRIDGE-BUILDING BY THE R.E.s

New Methods Brought About by War Necessities

Described by J. W. KELLOGG

WARS are not entirely destructive; quite a large part of the Army spends quite a large part of its time on work of a purely constructive nature—road-making, bridge-building, pipe-laying, land-draining and levelling. Not all the work is on the repair of military damage either; much of it is purely constructive work in areas which, before the arrival of our armies, had few roads and bridges or organised water supplies.

The Royal Engineers, by whom most of such work is done, is a corps with a very lengthy tradition and a great fund of accumulated experience. In bridge and pier building, for example, the R.E. know how to get results in a time which would astonish civilian contractors. The methods often have to be drastic, but the important point is that the bridge *is* built and the traffic gets through.

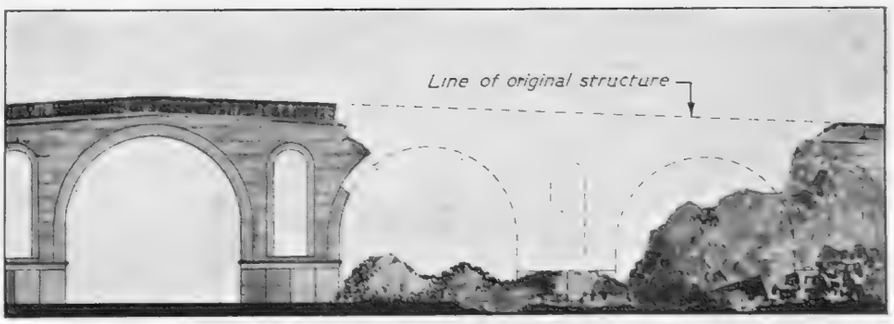
The R.E. use three principal types of temporary bridges—pontoon, trestle (now often built up with drilled girders rather like giant Meccano parts) and box girder bridges. Of course, they also often repair damaged stone or masonry bridges, and are quite capable of completely designing and building such bridges from the start, if necessary.

The lightest bridges are those built on collapsible wood-and-canvas pontoons. These will carry the lighter traffic up to ordinary motor cars. As long as the stream is not too swift-flowing, any width can be spanned. The next size bridge is that built on the 21-ft. wooden pontoons, which are often made in two halves for ease of transport. These are capable of carrying really heavy loads, including small tanks, though they may need trestle approach spans if the banks are at all steep, or otherwise unsuitable. After a while, the pontoons will probably be sent into further forward areas, and as a semi-permanent job a trestle bridge may be built up Meccano fashion, as shown in the photograph reproduced on this page. This stream, as the massive steeply-cambered stone bridge on the left shows, is obviously liable to become almost a torrent in the rainy season. The relief culverts on either side of the main arch are obviously to provide extra channels for the floods, when they come. But by then the R.E. will have repaired the damaged spans.

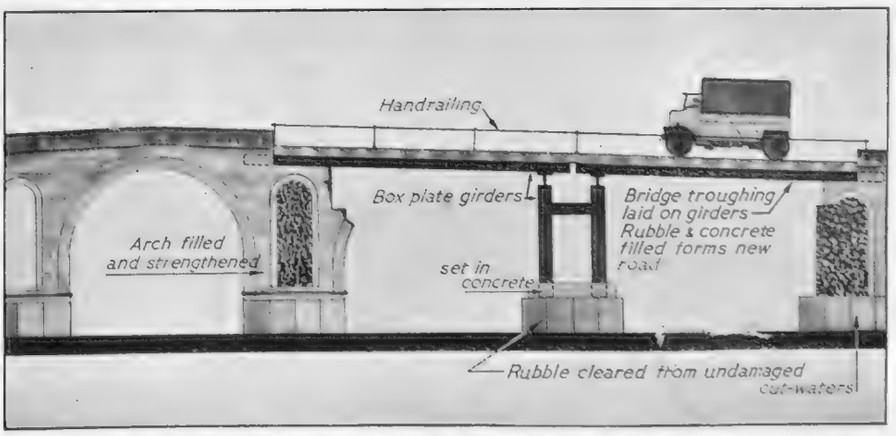
Meanwhile the "Meccano" bridge will suffice. The upright box girders have enlarged feet, to give a better bearing on the river-bed. Extra stays from the tops of the uprights also go down to the river-bed and take up the lateral stresses. In some of the centre spans, where the bottom was probably not very good, extra rope supports have been rigged on stakes driven into the bed. The actual roadway is carried on the transverse beams, which can be adjusted, like the shelves of a patent bookcase, on the holes drilled in the uprights. The chained pegs which hold these beams can clearly be seen. The actual roadway is now usually made of ferro-concrete slabbing, carried between I-shaped girders. The guiding strips between which Mr. Eden's car is here seen travelling are to prevent cars veering too far to one side, and so putting an uneven load on the uprights, with possible disastrous results. The next step consists of a range of up-to-date box girder bridges, capable of covering a big distance in one span. Each Divisional Field R.E. Company is issued with such bridges. These are hauled across by winches and wire ropes, the inshore end of the bridge being heavily weighted meanwhile. Often, however, these ready-made solutions are not locally available, then the traditional ingenuity of the corps comes to the top. One such incident occurred in Iraq, where a bridge capable of carrying tanks had to be built over a river which carried a great deal of shipping.

The building of a miniature Tower Bridge was the obvious solution, yet both time and material were too short. The Brigadier who was in charge had a brainwave, and designed the centre span to *sink* down to the bottom of the river when ships needed to pass. With local materials this was a much easier method than allowing for it to be raised 50 ft. or so in the air. The Brigadier's brainwave has fully proven itself, and the centre span of his bridge is now lowered to the river-bed and wound up again several times a day.

ONE OF THE PROBLEMS THE R.E.S HAVE BEEN CALLED ON TO SOLVE: This solidly constructed bridge at Protville, near Bizerta, was blown up by the retreating Germans. The temporary "Meccano" bridge on the right was soon in place, however: General Sir Alan Brooke and Mr. Anthony Eden are seen crossing it during their recent visit to North Africa. A suggestion of the way in which the Sappers might tackle the repair of the blown-up bridge later is given in the two drawings below



A DRAWING OF THE ACTUAL BRIDGE SEEN IN THE PHOTOGRAPH ABOVE. This is a masonry structure, one whole pier of which was demolished by the enemy during their retreat from Bizerta. A possible method of repair is indicated below



THE BRIDGE IS RESTORED: The demolished pier has here been replaced by a concrete and box-plate structure: on this other box-plate girders have been placed, with rubble and concrete for the actual road surface—Drawings by B. C. Wood

THE REAR GUNNER IN HIS POWER-OPERATED TURRET BEATING OFF A FIGHTER ATTACK. The two muzzles of his machine-guns protrude from slots to left and right: behind him, in the Halifax bomber, is the dorsal turret midway along the fuselage

The War by Air

The TAIL GUNNER in a BIG BOMBER

The Importance of this Member of the Crew in the Defence of the Aircraft

—Notes by A. P. Newall. Drawings by Roland Davies

AN IMPRESSION OF THE REAR GUNNER IN HIS ISOLATED POSITION: He is only in telephonic communication with the rest of the crew during flight: his position is cramped and confined, and his calling demands the utmost grit and determination

If ever the limits of human endurance are reached (in being zoomed, banked, dived and generally hurled about in space) it will be by a tail air-gunner. When a big bomber comes under fighter attack, it is commanded by the control officer in the astro-hatch. Under his orders the pilot dives, climbs, turns, rolls and runs the whole gamut of "evasive action." Meanwhile, the air-gunner must keep his sights bearing on the foe, regardless of whether a sudden dive leaves him floating feather-like under "negative G," or a high-speed climbing turn multiplies his apparent weight by five. Besides the discomfort, there is also the angle that the disablement of the rear gunner and/or his turret is the first objective of the attacking fighter. If the rear turret can be silenced, the road is open to an attack at close quarters with all the odds in favour of the fighter.

The fully-fledged R.A.F. air-gunner, then, is a man who makes a very excellent return for the 9s. or 10s. a day he may earn. He is the product, too, of careful selection and thorough training. His education as "tail-end Charlie" has three phases, first, the Initial Training Wing (where he will see little either of planes or guns), then the Air Gunner School, which is the elementary education, and, finally, to an Operational Unit whence he graduates to active service. After he has spent some time on active service he may, if he is a very good air-gunner indeed, be sent to the Central Gunnery School for conversion into a Squadron Gunnery Instructor.

The man behind the gun has a great deal to learn and not much time to learn it in. Recognition is vital, not only to tell friend from foe, but also the differing species of foe. There is a great deal of difference between the tactics to be expected from an Me. 109 and those an F.W. 190 is likely to try, and, in all, he must know 60-odd Nazis at first glance. He must know the mechanism of several different types of turrets and sights, know his guns and ammunition-feeding systems, and he must learn to work as one of a team. He must know dinghy drill, pyrotechnic signals; often he is a wireless operator as well. Above all, he has to learn to shoot well in every kind of light and from every kind of angle. He is reminded of little things that save lives and machines, such as the right way to use one's eyes at night, and the importance of personally cleaning the Perspex of his turret. He becomes accustomed, too, to the endless vigils which are the lot of the tail gunner from the moment his plane crosses the coast until it returns. He practises shooting from planes at canvas drogues, shooting at clay pigeons with shot-guns, and at little models with water-jets. He is tested on a Link Trainer to put the final polish on his skill. The routine the air-gunner learns as second nature is first identify your enemy, then r... its wing-span. The relative size of the enemy ... appears in his sights gives the gunner the ... In a good gunner, not only is this p... intuitive, but also the allowance for deflec... planes attacking on either side of dead aster... almost second nature. Contrary to what mi... thought, two- and four-gun turrets do not elim... the need for proper training in aiming. Nor d... tracer ammunition solve the problem automatic... It actually takes quite a lot of practice to lear... interpret tracer correctly. Due to some opt... illusion, the path the tracer seems to the eye to ... is quite different from that actually followed ... the bullet.

After undergoing such a course, and getting ... final polishing at the Operational Training U... our A.G. is a good workmanlike shot. If he prove... practice to be unusually good, and to be of the ... which can teach others as well, he will quite proba... find himself posted to the Central Gunnery Sch... Here fighter-pilots and air-gunners—many of th... veterans of many raids—train together. The ... pilots provide the object lessons by attack... bombers, and the bombers do their best in ... Camera guns on attacker and attacked make ... records, which both parties and their instructors ... argue over at their leisure. At this post-gradu... course, the air-gunners are given a still more thoro... knowledge of their guns, of ballistics, of enem... planes and their tactics. They learn how to tea... and how to justify their position as Gunnery Leade... by being just that little bit better than the ordi... air-gunner. They learn to anticipate the ... violent evasive tactics, and to shoot just a sh... straighter and faster than the enemy. Evasive tact... are not random aerobatics — they are ... manœuvres designed to help the air-gunners b... putting the enemy fighter off his stroke. All membe... of the bomber's crew are linked by the intercom... phone. During attack they take their orders from t... gunnery controller in the "astro-hatch" (the ... transparent dome on the fuselage top). The bom... pilot may never see the attacking fighter, but he pla... his tactics according to the rather pungent ... witness account which comes over the intercom ... wires. The air-gunner is, of course, on the ser... circuit. A good team knows all the answers to t... usual attacks, and the tail-gunner is never caug... "on the wrong foot" by his pilot's tactics. D... the fact that the turrets are armed only with t... machine-guns against the fighter's cannon, the ... are not as uneven as might be thought. The re... gunner can count his ammunition in thousan... rounds as against the hundreds of the fighter ...

TWO IMPRESSIONS OF THE LATEST ADDITION TO BRITAIN'S ARMAMENT IN THE ROUND-THE-CLOCK BOMBING OF THE AXIS INDUSTRIAL WAR MACHINE. The Typhoon is now the finest intruder-bomber in action in the European theatre. Its armament—four cannon and two 500-lb. bombs—is ideal for daylight attacks on enemy shipping, railways, harbours and airfields. Its high speed and great range enable it to penetrate deep into enemy territory

TYPHOON—Latest and Greatest

An Appreciation of the R.A.F.'s Newest Fighter-Bomber

The jack-of-all-trades machine is at a heavy discount in the air world to-day, where the "one man, one job" rule is applied to aeroplanes with all the strictness of the most exemplary trade union. The Spitfire, for example, is now little more than a family name for three distinct machines, the VA and VB low-altitude dog-fighter, and the IX high-altitude escort and bomber-destroyer. It is much the same with the Hurricane, while even the Typhoon, the latest and largest single-engine machine in our service, is flying as three distinct types. The original Typhoon 1A has 12 machine-guns, the more common 1B has four 20-mm. cannon, while the very latest is the bomber version of the 1B, which has two 500-lb. blast bombs slung under the wings, as well as its normal armament.

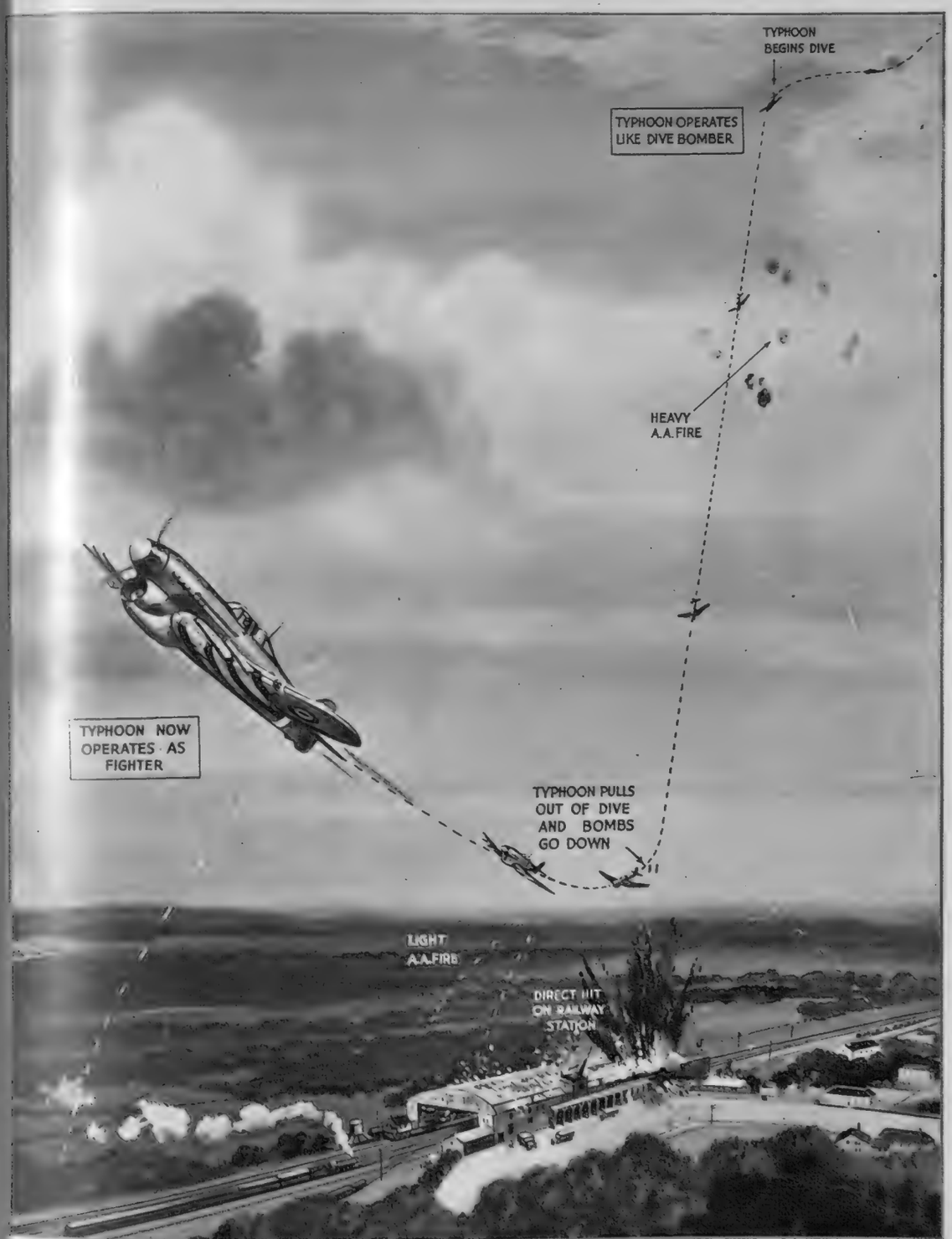
The Typhoon is a plane of very advanced design and performance, capable of overhauling and destroying any known Nazi aircraft. Its engine, the Napier Sabre, is unique in being a 24-cylinder sleeve-valve unit, with the cylinders arranged in four horizontal banks.

One could hardly expect such a thoroughbred to be as docile as a hack, and the Typhoon undoubtedly needs knowing, and the pilots themselves need training on Hurricanes first. It lands at speeds between about 115 m.p.h. and 105 m.p.h., according to the technique adopted. The take-off, made at similar speeds, calls for the possession of "hands," in the horsemanship sense. The maximum speed is ambiguously given as "over 400 m.p.h." How much over is indicated by the fact that when some Me. 109s attempted to shoot-up an airfield at which some Typhoons were stationed, the British machines were able to take off and overtake the raiders in time to shoot several of them down into the Channel.

The intercepting of hit-and-run raiders was the Typhoon's original job. The closely analogous job of ground straffing—where speed and punch count most—is also now part of its routine. The "Tiffies" specialise in train-busting, small-ship sinking, and shooting up small factories, railway stations, road transport, power stations and enemy aerodromes. The power of the four cannon should not be under-estimated—they are quite capable of sinking trawlers and minesweepers.

The fact that the Typhoon now carries an extra 1000-lb. weight of armament, in the shape of one special blast-bomb under each wing, indicates that its teething troubles are over, and that flying and servicing this complicated mass of machinery has been reduced to everyday routine.

In their role of bombers—the first of this type *sui generis* we have had—the Typhoons fly over at a height of several thousand feet. When just short of their target, the planes dive at an angle of about 70 deg., pulling out after the release of the bomb when travelling at about 480 m.p.h. This is a far more accurate method than low-level bombing. Its diving speed is greater than that of the Stuka, greatly reducing the risk of damage by flak. The bombs reduce performance surprisingly little while they are there, and the moment they are dropped the Typhoon once more becomes the fastest, heaviest-armed fighter. No reduction is made in the number of cannon or quantity of ammunition carried. As practised Typhoon-style, dive-bombing has more than recovered its old value.



THE TYPHOON IN ACTION: Carrying two 500-lb. bombs, this aircraft can fly at 400 m.p.h., nearly twice the speed at which our 1939 medium bombers carried the same weight. It can also operate like a dive-bomber, hurtling down almost vertically on the target as shown here—*Drawing by Roland Davies*

ANOTHER IMPRESSION OF THE TYPHOON, showing its four cannon-guns and two 500-lb. bombs

THE CRUISER WHICH TOOK THE KING TO MALTA ENTERS THE GRAND HARBOUR AT VALETTA ESCORTED BY DESTROYERS: H.M.S. "Aurora," a 6-in. cru of 5,270 tons, with the Admiral's flag at the masthead, glides to her mooring buoy at 9 o'clock on a glorious summer morning: as soon as the ship mo the Jack would be flown at her bow. In Valetta Harbour a vessel cannot anchor, as the bottom is solid rock: mooring buoys are therefore used. "Aurora" came into the harbour, the King was standing on a special platform just in front of the bridge. Note in this picture the machine-gun in a s turret structure superimposed on the upper bow gun-turret—*Drawing by Montague Dawson* (*see notes at right*)

THE BRITISH DESTROYER WHICH SUNK THREE U-BOATS DURING ONE TRIP ON ESCORT DUTY WITH THE ATLANTIC CONVOYS: H.M.S. "Hesperus" delivers a fin blow on a German submarine while she herself was avoiding five torpedoes from other U-boats of the wolf-pack—*Drawing by Wm. McDowell*

H.M.S. *Hesperus* is a 1,340-ton destroyer of the Hero class. Whilst engaged in combating U-boats in the Atlantic recently, one submarine had already been successfully killed when a second was spotted on the surface at night time. *Hesperus* gave chase and the U-boat submerged: attacked with depth-charges, the vessel was forced up to the surface. "We knew that there were other submarines in the vicinity," said one of the *Hesperus's* crew. "No doubt on this point was left in our minds when we saw the tracks of five torpedoes fired at us. Two were very narrow misses." The Captain (Commander D. MacIntyre—'Bulldog Drummond of the Atlantic') immediately ordered full speed ahead. He did not ram the U-boat because he was satisfied that she was sinking, and he did not want to damage his own vessel, which still had to guard the convoy. He took the *Hesperus* across the U-boat's and delivered a slanting blow which must have damaged further. Although it was round about midnight, we were close that we could see a German on his knees on the tower as we went by."

Ten hours later the destroyer was fighting her successful action!

A CRUISER with a FINE RECORD

And Two Special Drawings of the Work of Our Destroyers in Combating U-Boats and Aircraft

On June 20 the King arrived in Malta, exactly sixteen years to the day after his previous visit in 1927 as Duke of York. He made the journey from North Africa in H.M.S. *Aurora*, escorted by destroyers and squadrons of fighter aircraft.

The ship selected for this great occasion is a 6-in. cruiser which has a distinguished record of war service in the Mediterranean. She is a vessel of the improved Arethusa class, built in the Royal Dockyard at Portsmouth and machined by the Wallsend Slipway and Engineering Company of Wallsend-on-Tyne. She was completed in November 1937: her displacement is 5,270 tons, and her complement is about 450. Her cost was just over £1,250,000.

Early in November 1941 *Aurora* formed part of a patrolling force of two cruisers and three destroyers which intercepted and annihilated two convoys of enemy supply ships in the Central Mediterranean and inflicted severe losses on the escorting warships. The convoys were covered by a number of destroyers and two powerful 10,000-ton 8-in. gun cruisers of the Trento class. In this brilliant and determined action nine of the ten enemy supply ships were set on fire and sank, and the tenth vessel, a laden tanker of 10,000 tons, was left blazing furiously. Three Italian destroyers were sunk and two severely damaged. Three weeks later a surface force, again under the command of Captain W. G. Agnew, in *Aurora*, intercepted and sank an Italian supply ship carrying ammunition, and a large tanker, laden with about 10,000 tons of petrol, benzine and other oils. One of the escorting destroyers blew up.

A year later, in December last, *Aurora* formed part of a light force of three cruisers and two destroyers which engaged an enemy convoy bound for Tunisia, and sank four supply ships and two of the escorting destroyers. Speaking later of this action, the commanding officer of the cruiser *Sirius*, one of the force engaged, said: "The gunnery of our flagship *Aurora* was the most extraordinary I have ever seen. The way she hit everything she fired at left us flames to shoot at, and it was really too easy. We had no use for searchlights."

Below—H.M.S. *Wolfhound* is a veteran destroyer twenty-five years old—one of the "V" and "W" class. Many months ago she was attacked by aircraft. With her back broken and her main deck split open, she gradually came to a stop. Within three-quarters of an hour 100 ft. of her bows had dropped off and sunk, but by skilful seamanship the commanding officer got the rest of his ship home; and beyond a few slight casualties no one was hurt. The half-destroyer was taken in tow by the trawler *Lady Philomena*: but to make the task more difficult fog came down. For six hours the volunteers on board never knew whether the bulkhead would hold or whether the ship would sink. Then the weather cleared and towing again began. Twenty hours after the first air attack the *Wolfhound* had reached harbour. The rest of the story belongs to the workers at a naval dockyard in the South: they took the ship in hand, and within fourteen months a new bow had been built and she was ready for sea again. Many of the men who worked on her remember the old *Zubian* of the last war, the destroyer built from the halves of the *Zulu* and *Nubian*!

THE DESTROYER "WOLFHOUND" LOSES 100 FT. OF HER BOWS AFTER AN ATTACK BY ENEMY AIRCRAFT whilst escorting a convoy off the East Coast. Despite this terrific handicap, the half-destroyer was taken in tow by a trawler and brought back to harbour twenty hours later. Within fourteen months the workers at a naval dockyard in the South had built on a new bow and the ship was ready for sea again—*Drawing by Wm. McDowell* (see notes above)

NAVAL OCCASIONS

A Collection of News-Pictures of the Royal Navy at its Everyday Wartime Tasks

The only warships in the Royal Navy still to use sail are Motor Fishing Vessels: there are fifteen of these little ships operated by naval personnel. Two of them have just completed a 2,000-mile voyage from Great Britain to the Mediterranean, which took about three weeks to accomplish. The motive power was a combination of sail and a new type of petrol engine. The fishing vessels are only 60 ft. in length: their duties are mainly harbour defence patrols and the maintenance of ferrying services in naval ports. They carry light armament

UNDER SAIL TO THE MEDITERRANEAN: Two of the Motor Fishing Vessels of the Royal Navy which have just completed a three-weeks voyage of 2,000 miles to the Mediterranean. There are fifteen these tiny craft operated by naval personnel

AT THE HELM OF A MOTOR FISHING VESSEL: Petty Officer Coxswain G. W. Jones, former Thames waterman; and Petty Officer W. Newton, former motor mechanic

TWO MEMBERS OF THE CREW OF ONE OF THE SMALL SAIL-SHIPS MAKE UP THE MAINSAIL. Ordinary Seaman J. Clifford, of Liverpool, a former rigger; and A.B. J. Gration, of Buckie, Moray Firth, a former fisherman (on right). The 60-ft. craft require careful handling in heavy weather

H.M.S. "ARCHER": A close-up view of one of the new Escort Carriers which have been beating the U-boats in the Atlantic

This is one of the American-built "Woolworth Carriers," now being operated by the Royal Navy in the defence of the Atlantic convoys. How many are actually in commission is still a secret, but five have already been named so far. Colonel Knox has declared that "dozens" have been in action with the American Navy. All of this type are merchant ships which have been converted for their special function of aircraft-carriers. Those with the U.S. Fleet are reported to be over 17,000 tons, with a speed of 16 knots: they are armed with light anti-aircraft guns and machine-guns. They can accommodate up to thirty fighters on board, or from to twenty torpedo-bombers. Already these Escort Carriers have demonstrated their value in clearing the Atlantic "Gap" of U-boats. H.M.S. *Archer*, shown above, recently sank a German U-boat in mid-ocean and captured some of its crew

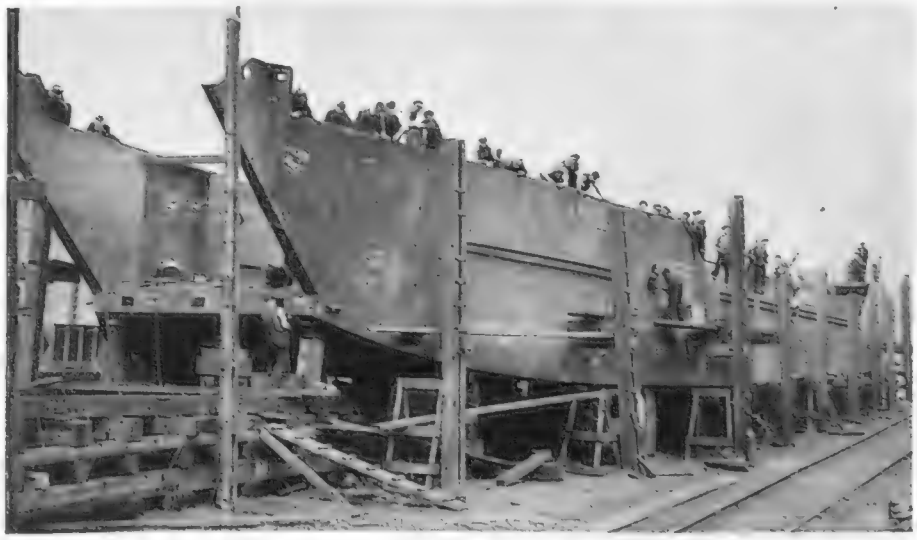
AN EMERGENCY IN MID-OCEAN : A sick sailor is transferred from a destroyer to a cruiser for an urgent operation. The patient is here seen going across from one vessel to the other in a special cradle

THE SICK SAILOR BEING LAID IN THE CRADLE which was swung out from the cruiser "Kenya" to the Australian destroyer "Norman" : While at sea recently the 8,000 ton cruiser *Kenya* received an urgent signal from the Australian destroyer *Norman*, requesting the transfer of a member of her crew, Able Seaman Bruce Gillmore, for an immediate appendix operation. Both ships drew as near as the seas would permit : H.M.S. *Kenya* then swung out a cradle attached to her crane ; the sick man was placed in the cradle on the destroyer's deck ; and the cradle was then swung aboard the cruiser. The operation was later successfully completed in *Kenya's* operating theatre by the ship's surgeon

THE WAR DEPARTMENT'S FLEET, operated by the Royal Army Service Corps. One of the ships of this fleet is the high-speed, target-towing launch "Vimy," (*above*) which tows the targets for coastal gun practice. It was used by Lord Gort at the Dunkirk evacuation, and is capable of 40 knots

Little is known to the general public of the Army's Fleet : but it has been in existence since the Napoleonic Wars ! The ships range from sea-going cargo boats to swift 3,000-h.p. launches. During the Dunkirk evacuation it carried 2,000 men from their boats off the beaches to the waiting ships. One of the tasks of the Fleet is to carry munitions and supplies to islands and sea-forts around the coast

MAJOR-GENERAL A. A. B. DOWLER tests the sights of the twin Bren anti-aircraft guns on board the "Vimy" during an inspection which he has just carried out around the South Coast



BUILDING-UP OUR FLEET OF INVASION CRAFT : A scene at one of the many inland shipyards in Britain : The landing craft which are being used for our invasion are being built up into a powerful fleet at secret inland shipyards, whence the craft are taken to the coast by road : at other yards craft are being built on canals and rivers, so that they can steam right off. The builders are men and women, many of whom have never before seen a shipbuilding yard in their lives. They have kept their work a secret for over two years

THIS is the COMMONWEALTH of TO-DAY

The Second of a Series of Articles Dealing with the Wonderful Response of the British Commonwealth of Nations

By CHARLES GRAVES

MANY a pessimist in this country genuinely thought that the Larwood-Jardine incidents during the Test matches in Australia were causing such bitterness in Sydney and elsewhere that Australians' sympathies for this country would be estranged for all time. It is true that feeling rose high on various occasions. But it was the curious reluctance of this country to invest money in Australia which would have been most likely to alienate affections. And it certainly looked as if Britain's apathetic attitude towards the development of Australia had contributed to the Americanisation not only of Australia's industries, but even to her mode of life and outlook thereon.

But what happened on September 3, 1939? Australia declared war on Germany within an hour of Great Britain doing so. The old loyalties proved that they were as strong as ever, body-line bowling or no body-line bowling; American motor-cars or no American motor-cars; British financial assistance or no British financial assistance.

At that time, Australia's three Services were mere skeletons. She had only four munition factories, and had never built a single motor-car. She had only five factories making machine tools. To-day, Australia is almost completely geared for total war. Approximately half her men between eighteen and forty-five are in the fighting forces, three out of five of her male population between fourteen and sixty-five are either fighting or doing war work, 72 per cent. of her factory employees are producing arms and equipment, 50 per cent. of her national income is being spent on war. The result is that Australia has virtually reached exhaustion-point in the use of her available man-power. In spite of this, Australia's land, sea and air forces have served on nearly every single battlefront—in Libya, Egypt, Syria, Greece, Crete, Malaya, the East Indies, New Guinea and Papua. Her airmen have served in all these places as well as over Germany, France, Italy and the Solomons. Her Navy has fought in every ocean.

When war began, Australia was not producing even enough small-arms ammunition for her own forces. To-day she is producing seventy-five types of ammunition, and every main type of armament needed to equip an army. Here is part of her production range to-day: cruiser tanks, fighter aircraft, armoured cars, destroyers, corvettes, freighters, naval mines, bombs, three types of mortar, field guns (including 25-pounders), various types of anti-aircraft and anti-tank guns, grenades, predictors and searchlights.

Twenty-five munition factories are in production; twenty-four are under construction or being authorised. To achieve this, it was necessary to use women, who now form a quarter of the total war workers in factories; while the Australian W.A.A.F. have freed 14,000 airmen for active service. In the past year, Australia has swung into her war effort more men and women than she did in the whole four years of World War I. To-day, 7,000,000 Australians are facing, together with their Allies, a Japanese empire of 97,000,000. And now that Australia has become the United Nations' advanced striking base in the South-West Pacific, the whole country has developed a warlike exterior.

War has changed the lives of all Australians. Hundreds of thousands of men and women who once worked contentedly on peacetime production are to-day expert producers of lethal weapons. It took England four years to produce the first Bren. It took Australia less than two, in spite of the lack of machine tools. To-day, Australia is probably the biggest producer of Vickers machine-guns in the Empire, while the plant, which was originally laid out to produce the out-dated 18-pounder gun and 4·5, now makes the 3·7 A.-A. gun, the 40-mm. Bofors, 4-in. naval guns and thirty different types of shell ranging from the 2-pounder to the 8-in. shell and 250-lb. aircraft bombs. The same factory is producing predictors.

There is also the Owen sub-machine-gun, the invention of Mr. Evelyn Owen, of Wollongong, in New South Wales. It is said to be one of the best quick-firing guns in the world.

Having begun the production of tanks only during the last year, Australian engineers have embodied a naval feature which is revolutionising tank production throughout the world. Formerly, the armour-plating was riveted in the tank hull, but flying rivets often killed tank crews. Australia is now making tank hulls without the use of rivets.

Three outstanding achievements in the network of strategic roads built in Australia since the outbreak of war are the East Australian inland road, the North-South Trans-Continental all-weather road, and the Northern East-West road. Between them, they cover nearly 2,500 miles. Plagued by flies, mosquitoes and dust, hundreds of men laboured for months in tropical conditions to ensure the sealing of the North-South road before the wet season came. It cost just under £1,500,000; and 4,000 men, using the greatest collection of road-making plant ever assembled in the Southern Hemisphere, worked hard against time.

The total value of the works programme in Queensland alone is £15,000,000, and includes a £3,000,000 aerodrome and repair depot which covers 20 square miles of what was virgin scrub and paddocks when Pearl Harbour was attacked. Coastal-gun installations, anti-aircraft and anti-submarine defences, and bulk petrol and oil storage dumps, are among the other works dispersed inland and along the seaboard.

Three hundred and sixty-five camps, each housing over 500 American and Australian troops, are on the programme, and the majority have already been completed. One of these was designed to house 7,000 men, and was finished in six weeks.

By the time Japan brought war to the Pacific, the Australian Imperial Forces had suffered 13,000 casualties, the population equivalent of over 250,000 United States troops. Side by side with British divisions, the Australians advanced over 300 miles from the Egyptian border in thirty-four days, helping to capture over 100,000 prisoners, and taking Bardia, Tobruk, Derna and Benghazi.

Australians, battle-weary from the fight in L helped to hold the historic pass of Therm there were Australians in Crete and in the S fighting. In the meanwhile, the handy Australian Fleet found itself in action where Axis navy sought to give battle. Its stre 1939 was two 8-in. cruisers, four 6-in. cruisers destroyers, two sloops, and three auxiliary v By the beginning of this year, the Fleet ha three cruisers, three destroyers and three au vessels.

During the epic siege of Tobruk, five Aust destroyers made history by maintaining the famous ferry service to the beleaguered garrison, running the gauntlet of land-based dive-bombers and torpedo-bombers on every voyage. An Australian cruiser helped to cover the evacuation of Somaliland, and another took part in the ill-starred attempt on Dakar. Armed Australian merchantmen took part

"TO-DAY, AUSTRALIA IS ALMOST COMPLETELY GEARED FOR TOTAL WAR." Before war, this was a railway workshop: to-day it is pouring out a stream of Bre carriers to take the fighting men against the Japs. "It took England four to produce the first Bren: it took Australia less than two, in spite of the of machine-tools." When war broke out Australia had only four munition fac —and she had never before built a single motor-car!

THE RT. HON. JOHN CURTIN, Prime Minister of Australia since 1941

TYPICAL OF AUSTRALIA'S WOR FUL FIGHTERS: Signaller Gregg, who took part in guerilla warfare against the on the island of Timor

GENERAL MACARTHUR, Supreme Commander in the South Pacific, arrives in Canberra after his dramatic dash from the Philippines. With him is Mr. Forde (Australian Minister for the Army). On the right is Major-General R. K. Sutherland

GENERAL MACARTHUR arrives by plane in Papua, New Guinea, to take personal command of the campaign. At the left is General Sir Thomas Blamey, Australian C.-in-C.; second from left is Lieut.-General George C. Kenney, of the U.S. Army

WITH AUSTRALIAN TROOPS IN NEW GUINEA: General MacArthur and General Sir Thomas Blamey visiting front-line troops during the campaign against the Japs

THE ROYAL AUSTRALIAN AIR FORCE DEFENDS THE COMMONWEALTH'S COASTLINE

Big bombers in flight over the Darwin Peninsula in the north—country which was many times attacked from the air by the Japs. At the outbreak of the war, numbers of Australian pilots and air crews came to Britain, and fought in the Desert, and rendered the greatest service to this country. When Japan came into the war and threatened Australia itself, many were recalled: but there are still Australian squadrons helping to defend Britain, over the land and at sea. To-day, Australia is even building aircraft of her own, in her own factories: and she is hitting hard at the Japs in New Guinea and in the South-West Pacific

THE AUSTRALIAN FIGHTING MAN IS AMONGST THE WORLD'S TOUGHEST AND MOST UNYIELDING

Wherever battles have taken place, in this war and the last, there have been Australians in the very forefront of the fighting. They never give up—and eleven of them have earned the Victoria Cross since 1939! This picture was taken during the course of one of the stiffest battles yet experienced: that of Buna, on the north coast of New Guinea, where Australians and Americans united to drive out the Japs, despite the most incredible hardships. The Australian mortar crew in this picture are fighting in jungle country, laying down a barrage for the infantry to advance against an enemy pill-box

in several battles, while unarmed Australian merchant men shared the hazards of the oceans in transporting troops, supplies and food.

In the early days of the war, the Royal Australian Air Force provided the first air squadron from a British Dominion to go into action against the Axis. This was the famous No. 10 Squadron of the R.A.A.F., which has always been "top of the batting averages" in the Battle of the Bay of Biscay. Everybody will recall No. 452 Squadron with its glorious and tragic history. Its first three Squadron Commanders were all aces, and all are now dead. The first was Paddy Finucane; then came Squadron Leader Bungay; and finally, "Bluey" Truscott.

If money speaks louder than words, then compare the last pre-war Australian Budget for £98,000,000 and this year's of £653,000,000 of which £540,000,000 is for war expenditure. By the end of the financial year, expenditure on the present war will have exceeded £1,000,000,000—an average of £139 a head.

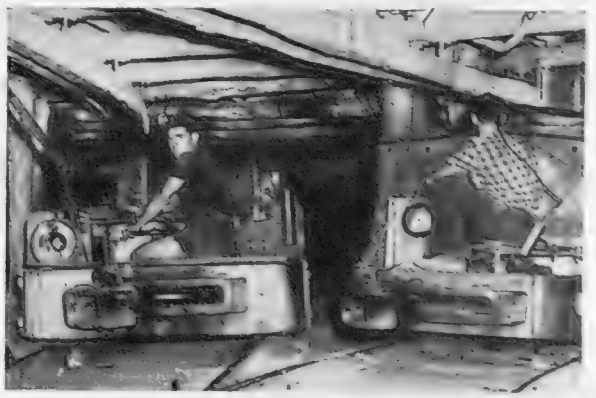
This year's Budget was framed so that direct taxes would rise 23 per cent., indirect taxes 17 per cent. and miscellaneous revenue 5 per cent. The remaining 55 per cent. was to be secured by loans from the Australian people. Rising war expenditure, however, forced a Budgetary review in February 1943, with the result that taxation on present incomes has been raised to return an additional £40,000,000.

Total taxes have trebled since war began. Direct taxation which, in 1938-39 averaged £2 2s. 10d. a head, has been increased by approximately 900 per cent., while indirect taxation has been nearly doubled.

Tax now begins at 6d. in the £ on incomes of £104 a year, rises to 14s. 1½d. in the £ on incomes of £5,000, and continues to increase to a maximum of 18s. 6d. in the £ on top incomes.

Adult basic wages—the legal minimum wage for the unskilled worker—are fixed by Arbitration Courts. At present they vary from £4 11s. to £4 17s. 9d. a week. Skill margins and extended working hours bring average adult male earnings to something approximating double this figure.

P.S.—If deeds speak louder than money, remember that the Australians have won eleven Victoria Crosses in this war.



MOTOR SPIRIT IS NOW BEING PRODUCED IN AUSTRALIA FROM SHALE DEPOSITS. This is an industry accelerated by wartime needs. After being crushed, the shale is subjected to intense heat: the gas given off is passed through condensers and converted into liquid crude oil. After treatment, the latter leaves the cracking plant as motor spirit: it is then refined and made suitable for modern high-compression engines. The pipe-line to the railway is 35 miles long. At the oilfield, railway tracks extend for miles underground, the locomotives being electrically propelled (above): to house the workers, a well-planned township has been constructed by Australian labour (on left)

AWAY FROM THESE WARS . . . .

Memories and Thoughts of the Years Between

—A Fortnightly Causerie **By J. G.**

LIBELLED Ladies.—A great mass of literature has grown up round some of the leading lights and leading ladies in Whig society in the era of the political importance of the Whigs.

That importance, I judge, was paradoxically greater when the party was in opposition than when it was in power. Fox, indeed, is not only the leading light of Whiggism—he is the prototype of Whiggism. It blossomed in the wilderness and usually ran dry in the oases of power—as did Fox. It was not at the time of the Exclusion Bill wrangle, nor in their fifty years of power, not in the '15 or the '45, but in their twenty-three years in the wilderness (which began in 1807 when the "Talents" ministry crashed) that the Whigs set their seal and rained their influence on English social and political life and thought. The achievements in politics which resulted from their interludes in office after 1830 were harvests from those years in the wilderness, but the importance of that long period of gestation in the wilderness—before it briefly blossomed as a rose — must not be underrated.

Now, the worst thing that can be said about this "mass of literature" which has of late grown so thick round them is that most of it is journalism. Your journalist as a servant *par excellence* of the public, must give the public "what it wants." It wants colour, sensation, the picturesque. It has no time to study, to make researches, to weigh evidence, to demand proofs. Its public will pay tuppence for the coloured, but not a penny for the plain.

A mass of clever, smart, nosey young women writers and brilliant, cynical, self-assured men have made the period their own and, without recourse had or even sought to the family archives of many a great Whig family, have painted a confident and coloured picture of Whig society, political and social, which does little service to English history. With sure fingers they dip into their basket of snippings and tie a coloured label on this figure and that institution, labels which succeeding writers accept as truth and the whole truth. Georgiana, Duchess of Devonshire, "kissed a butcher"—wicked woman. Harriet, Lady Bessborough, had a lover—disloyal wife, bad mother. Fox—a desperate gambler from boyhood. Sheridan—always drunk. Princess Lieven—kicked Wellington out of Almack's. Lady Palmerston—promiscuous. Palmerston—dyed his whiskers, dangerous man. Whitbread, Romilly—suicides. Melbourne—tolerant husband of Caroline Lamb, who pursued Byron like a fury. *Reform*—passed in Brooks' among gamblers and drunkards. Country-house life in Whig circles—scarcely veiled adultery, selfish extravagance, drunkenness and time-waste.

THE WIFE OF BRIGADIER CHARLES ORDE WINGATE (whose jungle exploits are recorded on pp. 79-82 of this issue). A picture taken at her parents' home in Scotland, where she has recently been fishing in the salmon streams

Whig Society.—Here and there, sober writers who *own* (or have access to) the documents upon which a just estimate of these Whigs can alone be based, stem the tide of vulgar error (which grows in the retelling) by publishing authoritative books which (with chapter and verse) throw a very different light on these Whig statesmen and ladies.

But soon enough the torrent breaks out again. The old errors reappear and the truth is swept away in the swirling froth of vulgar journalism. Greville is by historians now accepted as judicial and sober. But he is still raked for scandal only. Creevey is skimmed for his froth, not for his facts. The serious contributions based on documents, which could correct our judgment, are drowned in the flood of sensation and froth. Lady Airlie gave a true picture of Whig society in two books based on family papers. Lord Bessborough told the truth about Harriet, Lady Bessborough, derived from pure sources. Greville and Creevey, if read entire, are as full of praise as of criticism of the political ideals and efforts of social reform of those Whigs. From these and a few more documented studies of a period and a society a picture very different from the vulgar daub emerges. True, there is no smoke without fire. Those old Whigs lived in an age when morality was looser or infidelity perhaps more difficult to conceal. It is not denied that the great ladies had lovers and that the paternity of some of their children was obscure. (The discoveries of science have enabled their descendants more easily to keep in this respect the Eleventh Commandment.) But what is clear is that these ladies were still "great ladies," and not only good mothers but in all ways but one loyal wives, supporting and comforting their husbands in their careers, planning and caring for their children and dependants.

If there were no Poor Law and old age pensions, these ladies daily saw to it that their own poor people did not want; and every one of them had her list of pensioners. We may spurn it as charity and patronage; we cannot dismiss it as selfishness and insensibility.

Country-House Life.—Nor were their great country houses temples of vice, luxury, extravagance and drunkenness. On the contrary, life in them in the long autumn months was usually duller even than the Victorian pattern. There was no organised entertainment. Guests and poor relations came continuously for month-long visits and made shift to amuse themselves with local sight-seeing, a little music, albums of Italian views, and a walk in the shrubbery. The men talked politics in the library, rode and shot occasionally and seldom went even partially drunk to bed. As for the ladies, they retired earlier than is common nowadays.

And another point emerges. The idea that all these Whigs were enormously rich noblemen, playing a game of power politics in self-interest, is grossly misleading. The sincerity of their ideals of social reform was constantly proved by their pioneer efforts. Men like Whitbread and Grey-Bennet, nay, even "Wicked-shifts" Brougham, were pioneers indeed and years in advance of their age in vision and action in that democratic field. And the great saloons of Bowood, Chatsworth, Wrest, Brocket, Panshanger and Broadlands echoed to uplift and high thinking more often than to revelry and hiccups. If these Whig companies were "still sitting round the breakfast table at noon," they were drinking no more intoxicating stimulants than Macaulay's periods and platitudes; and the ladies went early to their beds, not yawning from a plethora of scandal but from a surfeit of Tom Moore's sentimental ballads. Indeed, life within those Italianate façades was dull enough and domestic enough to satisfy the most exacting Victorian. The luxury, the surfeits of food and servants and unnecessary frills, were there, I grant you, and that exclusive class prejudice and outlook, too. But were these not just as much in evidence in the drab Victorian and the brilliant Edwardian eras? You may condemn the ages which suffered such fashions, but you cannot condemn the individuals who used them. As well and justly might you condemn as a fool Bacon for wearing absurd trunk hose, or Dr. Johnson for snuffing candles instead of turning off switches. You cannot write the history of 1830 with the mentality of 1930.

But who or what can ever kill a vulgar error or a vulgar rumour which has had time to entrench itself? Nothing but a marked advance in general education—and the time is not yet.

So long as we continue to tolerate "historians" whose object is to dramatise and sensationalise history with the aim of giving distraction to a half educated, sensation-loving reading public, whether in the form of "historical" films, or novelette biography, so long will truth remain at the bottom of the well and hastily-scrawled labels do duty for considered judgments. The public has still to be educated up to the stage of examining evidence, rejecting hearsay and sifting truth from falsehood and relevance from irrelevance. Meanwhile, the bulk of our contemporary (so-called) historical studies are of the order and importance of marionette shows and penny novelettes.

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The New London Stage Productions

Reviewed by PHILIP PAGE

"*THE MASTER BUILDER.*"—Has any dramatist ever written a more baffling play than this? Does the keenest student of the high-brow drama know what it is driving at? Did Ibsen himself really know what he was driving at? As a tale it is comparatively simple—about a bad-tempered architect, jealous of the rising generation, with a wife depressed because her two babies had died and with a loathing for dizzy heights. But what is the true position of Hilda, the young girl who made him climb up one of those heights and thus caused his death? What is the drift of those long, long speeches? I could ask plenty more questions, but as I cannot supply the answers (nor, I suspect, could anyone else), I will refrain. What can be said definitely is that, in spite of all this, the play has a curious power. Mr. Donald Wolfit built up a masterly performance as the master-builder, and I thought Miss Rosalind Iden an admirable Hilda, though rather too much of the termagant.

The Fur Coat.—There is no problem as to what this play at the Comedy is about. It is about a lot of utterly unfunny things, which is a pity, since it was intended by the late A. G. Macdonell as a light comedy. The pity becomes almost tragic when one realises what a good writer the author was. But he seems to have had little or no sense of the stage. There is some wit, though not enough of it to keep things going. Even the noble efforts of those experts in stage fun, Mr. Henry Kendall and Miss Jeanne de Casalis, could not keep boredom away.

The Knight was Bold.—The all-important theme of the popular farce of nearly forty years ago, *When Knights Were Bold*, on which the musical show at the Piccadilly (taken off last week after but a short run) was founded, was the comic timidity of an essentially well-bred little man. The late James Welch played up this to the full. It was the fault of the adaptation rather than of Mr. Sonnie Hale, who played the part in this musical version, that this was completely missed. But I think Mr. Hale, good comedian though he is, might have been less perky and restless, and even less energetic. Anyway, I just could not laugh. However, we had music, some elaborate scenery, a large chorus, and those two charming and brilliant people, Miss Adèle Dixon and Miss Enid Stamp-Taylor.

REHEARSING FOR A BIG A.T.S. SHOW IN LONDON. A cast of sixty soldiers and A.T.S. girls are taking part in an ambitious revue, *Walk Up*, written and produced by Lance-Corporal Allan Stray, of the Royal Army Pay Corps. It opened at the Cripplegate Institute in Golden Lane on July 9. Here members of the A.T.S. and R.A.P.C. are assisting each other with their stage costumes during rehearsal

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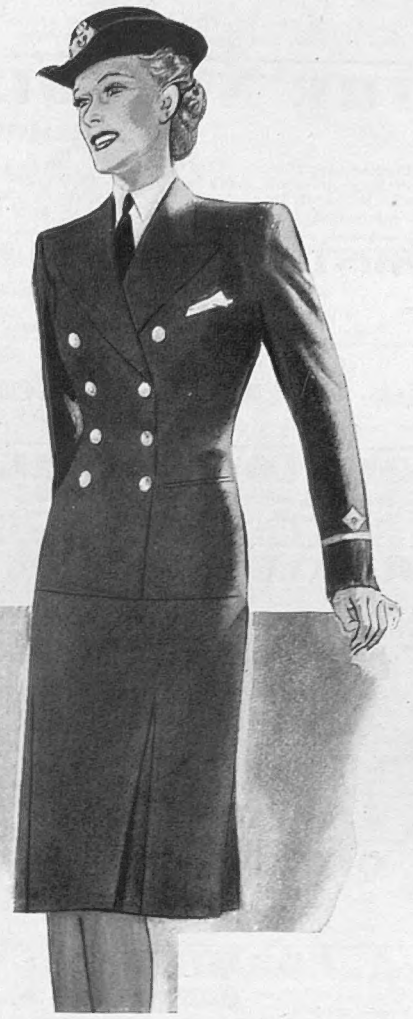

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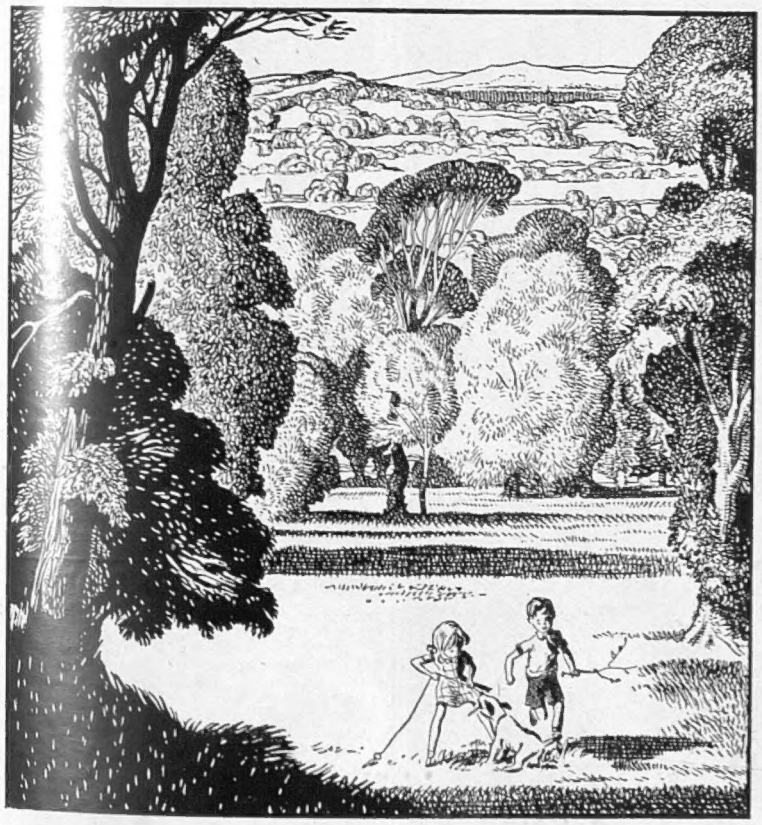

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One of the best known and best equipped hotels in North Wales, at entrance to the Welsh Tyrol. Quiet, restful, amidst beautiful scenery. H. and C. running water all bedrooms. Good train service Close station. Terms from 20s. per day incl. Own salmon fishing. Tel.: Llangollen 3207.

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We face the South, the sun and the sea. We offer modern amenities in our 60 bedrooms. We have a lift and are fully licensed. Bathing, boating, tennis and golf can still be enjoyed. A pleasurable spot for your break from war work. Tel.: Penzance 471. For terms apply Manageress.

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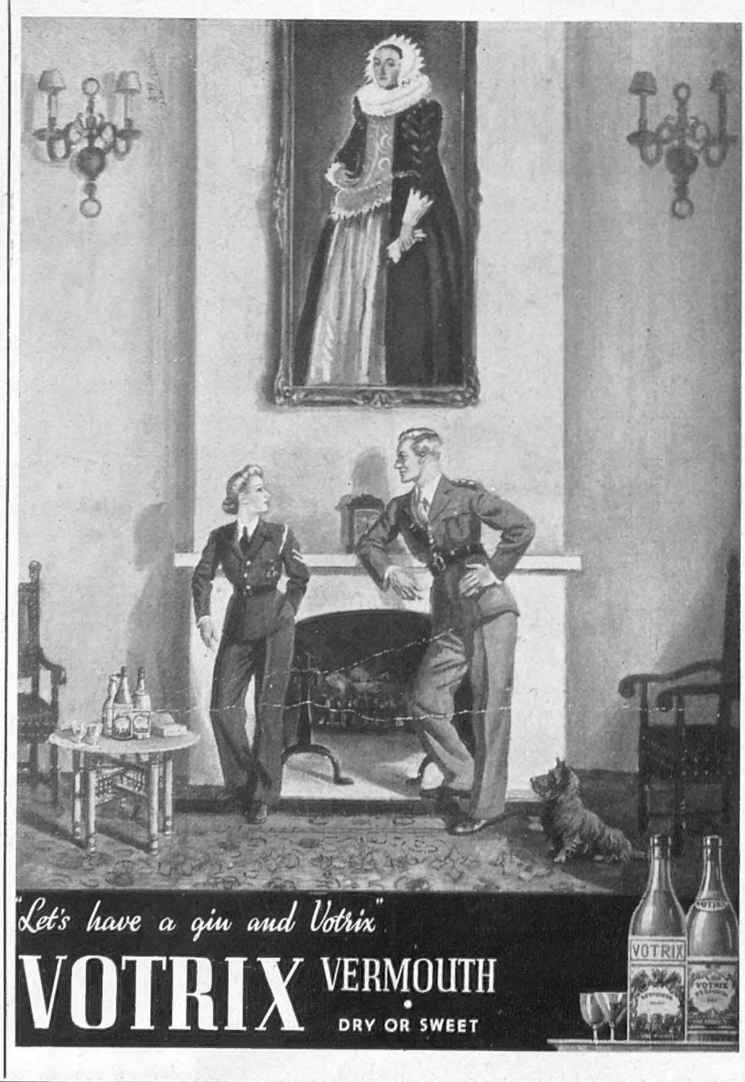

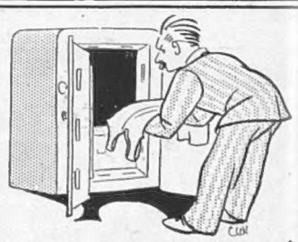

Treat with care for longer wear!

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White material, For drooping, heavy figures, from 59/6

Loose Breasts, from 52/6

Pink, Silk or Net, Detachable straps.

Very low back model, from 63/-

Please state Bust and Underbust measurements.

JOUJOU GIVES UPLIFT and SUPPORT to FIRM or LOOSE BREASTS

INGENIOUS DESIGN for AMPUTATION

WITH & WITHOUT NURSE WITH COMFORT

TO PREVENT BREAST FROM DRAGGING, COLLAR-BONES FROM PROTRUDING, MUST WEAR JOUJOU BREAST SUPPORTER. IT PREVENTS SORENESS, CHAFE AND STOOPING. GIVES UPLIFT. RELIEVES PAIN, INFLAMMATION, WHICH ARISE FROM NEGLECT. ALSO DESIGNED FOR MATERNITY AND NURSING MOTHERS. PREVENTS MILK CLOTTING. MUST BE WORN DAY AND NIGHT.

Various prices for one's requirements and taste.

FOR AMPUTATION. *Prices on application.*

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Personal fitting when calling or send your order.

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FAMOUS QUEENS . . .

LXXIX

HIGHLAND QUEEN

GRAND LIQUEUR
SCOTCH WHISKY

has behind it a long and honoured tradition. The direct personal supervision of the Proprietors throughout the various processes ensures the absolute uniformity and exceptional quality of this famous Blend.

MACDONALD & MUIR LTD., LEITH, EDINBURGH.

Distilleries:
Glen Moray-Glenlivet, Morayshire, and Glenmorangie, Ross-shire.

The Queen's Own Cameron Highlanders

This famous regiment was originally the Cameronian Volunteer Regiment of Foot, raised in 1793 by Alan Cameron of Erracht, Inverness-shire, and named after him, a title which was shortly afterwards dropped for that of the 79th or Cameron Highlanders. In 1873, the regiment was honoured by Queen Victoria conferring upon it the title of Queen's Own Cameron Highlanders. This title, incidentally, required that the facings on the dress uniform be changed from green to blue and conferred the right to bear the Thistle and Crown as a Regimental Badge.

Manufactured entirely in London, England

Barling PIPE CRAFT

Take care of your Barling Pipe. Supplies are extremely limited, consequently difficult to obtain.

When available, prices are as follows:—

	S.S.	S.M.	L.	E.L.
Standard or Sandblast	10/6	13/6	16/6	20/-
Ye Olde Wood	S.S.	S.M.	L.	E.L.
Selected Grains	15/6	18/6	21/6	25/-

Letters S.S., S.M., L., E.L., on each pipe indicate sizes—Small-Small, Small-Medium Large and Extra Large.

Index of Sizes clearly marked on each stem.

Manufactured by
B. BARLING & SONS, Estd. in London 1812
"Makers of the World's Finest Pipes"

A.A. & SUBMARINE DEFENCE

As keen as

"ECLIPSE"
—SUPER—
RAZOR BLADE

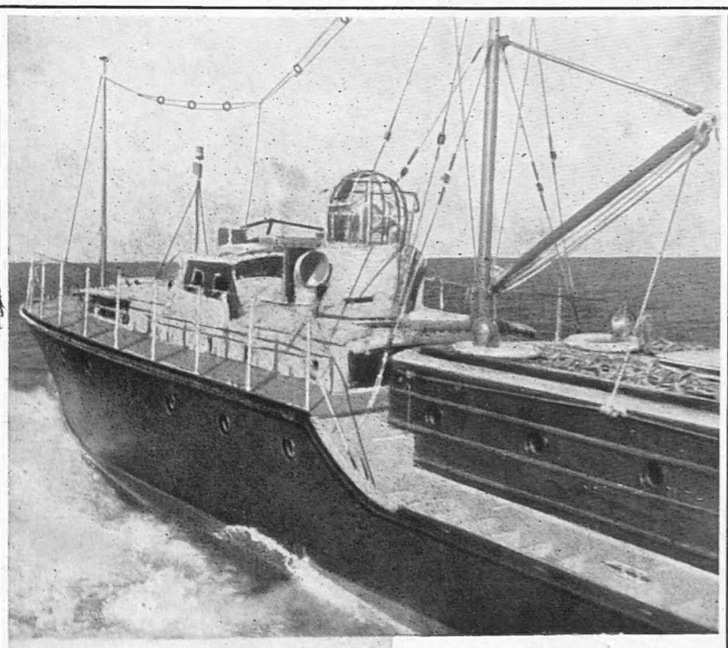
E167

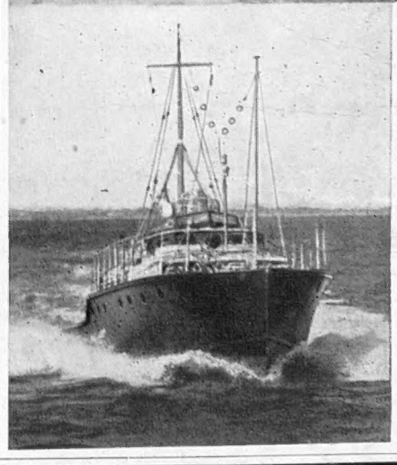
3d. each
including Purchase Tax

Keep an alert eye open for "Eclipse" Blades—now made only in the popular slotted pattern. Their clean and comfortable shaving is even more appreciated now that supplies are so limited.

Obtainable only from Retailers

JAMES NEILL & CO. (SHEFFIELD) LTD.





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SCRUBB'S
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OLD BOOKS HELP TO MAKE BOMBS AND SHELLS—BUNDLE THEM OUT NOW—PLEASE! THE NEED IS URGENT.

TO THE NOBILITY & GENTRY
MAY 1896

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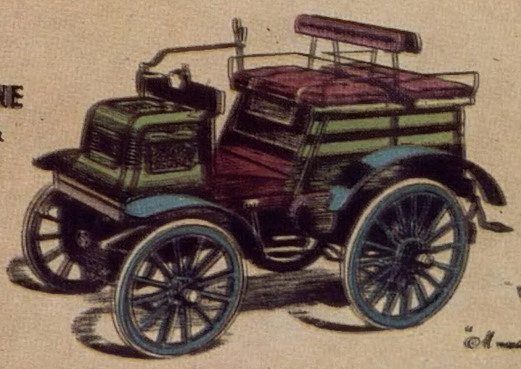
HAS THE HONOUR TO PRESENT

This NOVEL vehicle is propelled by an
INTERNAL COMBUSTION ENGINE
OF 2 CYLINDERS AND 6 HORSE POWER
relying on petroleum for its motive force
THE MECHANICAL carriage
will attain the comfortable speed of
TWELVE MILES PER HOUR
on the level, while hills can be ascended
and descended in safety



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SPORTSMAN
AND LOVER OF THE COUNTRYSIDE.
giving as it does full facilities for
the enjoyment of
FRESH AIR AND AN
UNINTERRUPTED VIEW OF THE Scenery

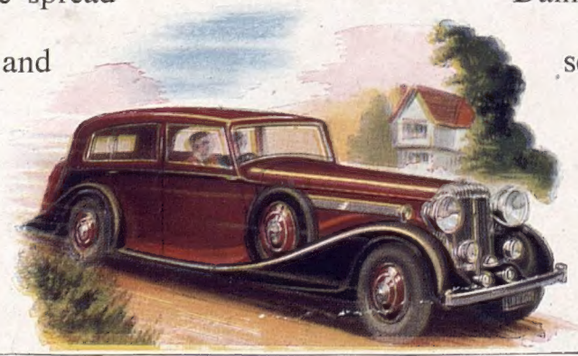
"A car made of transport that has undoubtedly come to stay"
— WIDE WORLD MAGAZINE

THE TWIN-CYLINDER 6 H.P. WAGONETTE {See Engraving}

To every motor-enthusiast of 1943

This delightful advertisement of the "Great Horseless Carriage" of 1896 was as advanced in its field as was the machine itself! In those days motor cars were decidedly for the few; but things have changed since then. The pleasures of motoring have spread to ever-widening circles, and in this social revolution Daimler has taken a conspicuous part.

Today this famous company is engaged on essential work, and there are no new Daimler cars for the public; but in the better times to come Daimler will be very much at the service of every motor enthusiast.



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